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ILLUSTRATIONS.

People's Theatre, Worms.—Herr Otto March, Architect ..... *Double-Page Ink-Photo.*
Competition Design for Craighall School, Leith.—By Messrs. Morris & Hunter ..... *Double-Page Ink-Photo.*
Stables, Bickley Hall, Kent.—Mr. Ernest Newton, Architect ..... *Double-Page Ink-Photo.*
Proposed New Premises, Kingsland: Mr. C. V. Johnson, Architect.—"Hill Wooton," Warwickshire: Mr. P. Morley Horder, Architect.—Competition Design for Darlington Municipal Buildings: By Mr. Arthur S. Jones, A.R.I.B.A.—Design for Staircase and Entrance Hall: By Mr. W. T. Barlow, A.R.I.B.A. ..... *Double-Page Photo-Litho.*

Blocks in Text.

Diagram of the Gradient Telemeter Level ..... Page 428
Diagrams, Comparative Sizes of some Continental and London Theatres ,, 429
Diagram of various conditions of Site for Theatres ..... ,, 430
Plan of Auditorium and Staircases, Hofburg Theatre, Vienna ..... ,, 431
Plan of Auditorium and Staircases, St. Petersburg Opera House ..... Page 431
Plans, Competition Design for Craighall School, Leith ..... ,, 434
Plan, Bickley Hall Stables ..... ,, 435
Plan, Design for Municipal Buildings, Darlington ..... ,, 435
Diagrams Illustrating "Student's Column" Article ..... Page 439

CONTENTS.

Some Suggestions as to Theatre Architecture 425
Notes 427
The Architectural Association 428
People's Theatre, Worms 434
Competition Design for New School, Craighall-road, Leith 434
Stables, Bickley Park 434
Proposed New Premises, Kingsland 434
Hill Wooton, Warwickshire 434
Competition Design for Darlington Municipal Buildings 434
Entrance Hall and Staircase 434
The Sanitary Aspects of the London Building Act 435
The London County Council 436
Architectural Societies 437
Archæological Societies 437
Engineering Societies 438
Commercialism in Art 438
Tewkesbury Abbey 438
Ball Room Floors 438
"Ball Room Floor" and "Cast-Iron Tank" 439
Iron Water Tanks 439
Larders 439
Student's Column: Details of Rural Water Supply.—XXIV. 439
Obituary 44
General Building News 440
Foreign and Colonial 440
Miscellaneous 440
Legal 441
Meetings 442
Recent Patents 442
Some Recent Sales of Property 442

Some Suggestions as to Theatre Architecture.

THE author of the paper read at the Architectural Association last week, the main portion of which is printed in the present issue, draws a contrast between the conditions under which theatre architecture is evolved in this country and on the Continent—more especially in Germany and Austria—which deserves attention. Mr. Sachs, who is exceptionally well acquainted with theatre architecture and theatre work generally on the Continent, maintains that in the case of large Continental theatres the element of architectural effect receives very serious consideration; the architect is selected, it is true, for his experience in the practical problems of theatre-construction, but not for these alone; he is expected to be an architectural artist possessed also of a certain kind of special technical experience; and the designing of a large theatre, if successfully carried out, is enough in itself to give the architect a considerable status in his profession. In England, on the contrary, the building of a theatre is mainly a matter of business speculation; the object is that it should pay, and that it should pay as soon as possible, and the consequence is that the main thing expected of the architect is to provide a house which shall be comfortable and safe at as small a cost and in as short a period as possible. It is no great wonder if in that case architectural design should become a very secondary consideration; there is, in fact, no time for it; and the utmost that is aimed at is to produce a decent-looking exterior, in which the most readily available materials for the particular architectural clothing which is in fashion at the time are put together to produce a façade which may claim just the merit of being a decent piece of street-architecture, about on a level with the better class of large shops and business premises.

The contrast as put in Mr. Sachs's paper may be a little overdrawn in both directions. It may be true that the theatre architecture which is admired in Germany does not seem quite so admirable to us, and that some English theatres may compare better, architecturally, with their German rivals than is likely to be admitted by critics of Teutonic tendencies. But in the main the statement of the position is fairly correct. The English public and the English theatre proprietor do not as a rule trouble themselves much about the architecture of the houses. Until recent years, in fact, they troubled themselves about nothing except the absolutely necessary conditions of seeing and hearing properly. Of late there has come over the public a perception that a theatre which is badly planned as to its exits and combustible as to its materials may become a serious danger, and this having been discovered, proprietors are anxious to be able to assure their public that the house will not readily take fire—the auditorium part of it at all events—and that there are sufficient staircases and exit doors to allow of speedy clearance in an emergency. But beyond that we have hardly got. Neither the manager nor the public care much about the architecture of the house. A few pilasters seem to be demanded on the exterior walls, but if those are duly supplied, nothing further is looked for.

This is partly owing to the fact that we are, by hereditary law, such a "practical" people. There was a time when even the pilaster was not called for. Drury-lane, which was opened in the early part of the century with a round of applause, and which, in its original form, was apparently without even its present colonnade and its exceptionally prim portico,* was an example of what was considered fitting and sufficient in theatre architecture in those days; and in the address attributed to Cobbett (again to quote "Rejected Addresses") the plainness was even specified as a virtue: "You are now got into a large comfortable house; not into a gimcrack palace; not into a Solomon's temple; not into a frostwork of Brobdingnag filigree; but into a plain, honest, homely, industrious, wholesome, *brown brick playhouse*. . . . Look at the brick-work, English audience! Look at the brick-work! All plain and smooth like a quaker's meeting. None of your Egyptian pyramids, to entomb subscribers' capital. No overgrown colonnades of stone," &c. This, no doubt, was meant to be in character for Cobbett the economist; but it was only putting in a playful form what would have been the real feeling of the majority of theatre-goers of the day in this country. When Covent Garden Opera House was rebuilt we had got to rather more magnificent notions, and the "overgrown colonnades of stone" were forthcoming; but this was rather an exceptional occasion; and, after all, what a tame, *fade* piece of work it is beside the Paris Opera House. It is quite sufficient, however, even now, for the architectural demands of the English public, even for an exceptionally important house; as are, in their way, the average façades with pilasters up the sides and vases on the cornice which form the staple of our recent theatre architecture.

The indifference of the public is of course partly to blame for the indifferent architecture of theatres. If the public cared much about having anything better, builders of theatres would have to provide it, but they would certainly have to make the public pay for it by raising their prices of admission, because they could not do it at all otherwise. And hence there is really a very important point, architecturally, in the system of spending public money, national or municipal, on theatres, which prevails so largely on the Continent. The question of Government subsidy to theatres is no new one in these columns, for it was a favourite idea with the late Mr. Godwin, not however so much on architectural as on dramatic grounds; he was one of those who earnestly wished for a national theatre which should be independent of popular taste and popular support. We will not go into that side of the subject here, but we may say that the effect of Government or municipal support might certainly be quite as important in regard to the building itself as to the plays that might be acted in it. The system takes the building of a theatre out of the mere category of business ventures, in which the qualities chiefly sought for in the architect are those sought for in a locomotive engine—"economy, safety, and speed," and allows not only for money but (what is still more important) time being spent on the architectural design, which need not be run up in a hurry to hasten the return for the invest-

* See "Rejected Addresses"—

"Oh, Mr. Whitbread! fie upon you, sir!
I think you should have built a colonnade;
When tender Beauty, looking for her coach,
Protrudes her gloveless hand, perceives the shower,
And draws the tippet closer round her throat,
Perchance her coach stands half a dozen off,
And, ere she mounts the step, the oozing mud
Soaks through her pale kid slipper. On the morrow
She coughs at breakfast, and her gruff papa
Cries, 'There you go! this comes of playhouses!'
To build no portico is penny-wise;
Heaven grant it prove not in the end pound-foolish."

But the criticism, it will be observed, is solely on grounds of business economy, not of architectural shortcoming.

ment. Except under such circumstances there is little chance for the evolution of theatre architecture in the best sense of the word; and the moral is pointed by the fact that the one recent theatre in London in which an eminent architect succeeded in producing a picturesque and original architectural exterior could not pay its way, and has now, unfortunately, from the "Palace Theatre" sunk to the "Palace Music Hall."

Whether the Continental theatre architects, with all these advantages of circumstance, merit all the praise which has been bestowed upon their productions, depends upon the point of view. They have produced some imposing and palatial buildings. But there are not many instances in which they have produced buildings which have a special theatre character discernible at first sight. They have not indeed always avoided the mere commercial manner of building, for it appears to us that Messrs. Fellner & Helmer, the Vienna specialists, who have built theatres all over Europe, are sought for mainly for the experience which enables them to plan and put up a theatre quickly and completely, having all the knowledge of the practical requirements of the business at their fingers' ends. That kind of achievement, however, does not raise an architect to eminence as such—as a designer of buildings, but rather as a mere constructor. In other cases we find buildings which have a great deal of palatial dignity and splendour, but which do not sufficiently proclaim themselves as theatres. A theatre is not to look like a concert-hall externally; it should be unmistakably a theatre. That the building erected as the Palace Theatre has not this characteristic is probably not Mr. Collcutt's fault, since he, we believe, only supplied an architectural casing for a building first planned independently of his assistance. A theatre, rightly considered, ought to be a very suggestive problem for the architectural designer. It is divided, practically, into two blocks, each planned for a special and peculiar use, different from that of any other kind of building. The auditorium is to seat an audience in a concentric fashion, so that all their eyes may be conveniently directed to the stage; and the stage portion, in a large theatre, is more conveniently and suitably arranged on square lines, and requires a considerably greater height than the auditorium, for the raising and lowering of scenery, &c. Moreover, it is a practical axiom of modern theatre-building that the stage portion should be as completely separated from the auditorium as possible, except in regard to the proscenium opening, for the sake of safety to the audience, as almost all fires in theatres originate on the stage. From these considerations it may be laid down almost as an axiom in the design as well as in the construction of theatres, that the auditorium and the stage portion should be completely distinct in architectural treatment. To design a theatre as a single block of building, on palatial lines, is to throw away the most obvious method of giving distinctive character and expression to the building. The auditorium should show its circular lines more or less, but so as to render it obvious that they are there; and the more decorative treatment is rightly applied to that portion of the exterior. Horizontal extension is the special quality of this portion of the house, for great height in an auditorium is to be avoided as far as possible, as placing the uppermost tiers of spectators in a very disadvantageous position for seeing the actors and the spectacle. The stage portion should be a more plainly-treated block and tending more towards verticality in its lines, hence offering the most marked and characteristic contrast to the auditorium portion; and the wall of the stage portion which is next the auditorium should be emphasised in its treatment—made to appear as solid and monumental as possible, as the outward and architectural expression of the fact that it is the fence-wall, so to speak, between the audience and the stage portion. Here there are certainly elements enough for the suggestion of marked and characteristic architectural treatment and contrast, of which, however, full advantage is very seldom taken, and of which, it may be admitted, it is impossible to take full advantage, except with a tolerable expenditure both of money and thought. In the Paris Opera House, where both these desirable conditions existed, this contrasted treatment of the two portions of the house externally was obviously kept in view, and the architectural problem has been better met than in most large theatres. It may be urged, in regard to the auditorium portion, that the actual auditorium does not come up to the outer wall of the building, being surrounded by corridors and *foyers*. But, by making the main corridors concentric with the house, the form could generally be manifested externally to a sufficient extent to give the "theatre character" to the exterior; and, moreover, it must be remembered that the planning of a semi-circular auditorium* within entirely rectangular enclosing walls necessarily leads to awkwardly-shaped internal spaces and a certain degree of complication in planning. With management, the curved line can generally be shown externally sufficiently to give the architectural character and expression demanded. It is done in the plans of the Hofburg Theatre at Vienna and of the St. Petersburg Opera House, given on another page as illustrations to Mr. Sachs's paper; and it is done in a very complete manner in Herr March's "People's Theatre," at Worms, the view of which forms one of our lithographic illustrations, and which we selected for illustration on that very account, as being a piece of distinctive theatre architecture. It has been done very completely in England in the Shakespeare Theatre, at Stratford-on-Avon; though there, of course, owing to the small size and unpretending character of the house, the problem was a comparatively easy one. Where it is difficult to follow the circular form in the lower portion of a large theatre, owing to the number of necessary rooms to be provided, there will at all events seldom be any difficulty in allowing the curved line to show in the upper portion of the auditorium. And the contrast of curved with rectangular lines is so fine a source of effect in exterior architecture that we should say no true architect would lose it in a case where the practical form and purpose of the interior gives such a decided lead towards such a treatment.

As to architectural style, the type of architectural treatment which, in all its varieties, is comprised under the general terms Classic and Renaissance, seems far more suitable for the expression of a building intended for amusement (for that is after all the real *raison d'être* of the theatre) than any treatment founded on Mediæval types. The theatre as we have it is an essentially modern and post-Renaissance institution; its architectural expression should be that of dignity, cheerfulness, and refinement, qualities which to our thinking are much more characteristic of the Classic than of the Mediæval type of architecture. Moreover, the square-headed openings and horizontal lines of the Classic type of design lend themselves better to the treatment of the broad masses of building into which a theatre is or should be naturally grouped, than the details of a style characterised by arched openings and vertical lines.

In regard to the interior design of theatres we are quite in accordance with the suggestion embodied in Mr. Sachs's remark, "Surely a building can be simple and yet beautiful." In this country, at least, tawdriness has unfortunately become almost proverbially the "note" of the interior design and decoration of theatres, insomuch that a similar quality of design in other classes of building is often stigmatised as "theatrical." It seems to be assumed that when people meet for an evening's amusement they expect, in order to heighten their spirits, to be amongst gaudy surroundings. To some tastes, at all events, the effect of this gaudiness is depressing rather than exhilarating. The taste for it seems, in the first instance, to have radiated from the stage into the house. The decorations of the scene itself are necessarily more or less ephemeral in character, and under the unreal glare of the stage lighting an unreal glitter and meretriciousness in the stage surroundings may pass without too severe criticism. We know that it is all a sham, and do not take it seriously. But there is no reason why this element of meretriciousness should extend itself to the more or less permanent decorations of the house itself. In fact, there is all the more reason why it should not. The house should be differentiated from the stage, and if a brilliant effect on the stage is specially aimed at, as in pieces in which spectacle plays a large part, there is a practical reason (as Wagner showed in his Bayreuth theatre) for keeping the decorations of the house more sober in key, to heighten the more the effect of the stage spectacle. The proscenium arch is the window through which we look into an imaginary world, and the unreal scene should be as distinctly separated as possible. But the stronger reason for greater reticence and refinement in theatre design and decoration is the architectural one. Why should the interior design of our most important and most popular places of amusement be almost always the scene of a style of decoration which most of us would condemn as tawdry if applied to the drawing-room of a mansion? A bad acquired habit or tradition is partly to blame for this, but the obstacle to improvement is to a great extent to be found in the conditions, already referred to, under which our theatres are mostly built—hurry and the desire to produce the greatest effect at the least cost. There is no time for the study required for a severe and well-thought out decorative scheme; the architect, possibly, has little to do with it; he attends to the plan, construction, and practical requirements, and a firm of "decorators" are called in to make the house as brilliant as possible in as short a time as possible. Nothing good can come of such a system. We want to see theatres in which a sober and artistic scheme of architectural design and decorative treatment has been elaborated by the architect, not with the object of producing mere glitter and restlessness of effect, but of making the most, in an architectural sense, of the effect of a class of interior which in reality is peculiarly suggestive for architectural treatment. We want to see well-considered and refined detail instead of commonplace ornament stuck about everywhere, merely because it is supposed that something is wanted and whatever can be most quickly applied will answer the purpose. In recent days this example has in fact sometimes been set on the stage itself. Where plays of "domestic" character are to have a long run, a great deal of taste has been displayed in some instances in the designing and furnishing of the imaginary room in which the actors go through their presentment, and one has sometimes had to wish that the good taste expended on the stage fittings had also pervaded the decoration of the house. These are exceptional instances certainly, and do not go far to contradict our general position, that the inherently factitious character of stage-decoration has traditionally affected all theatre decoration. It is perfectly unnecessary that this should be so; it is perfectly possible to make a theatre-interior an example of as good and pure architectural design as could be found in any other class of interior. But to do this the system must be altered. Good architecture requires time and thought to perfect it, and artistically-designed decoration, even of a comparatively simple kind, is more costly to carry out properly than the

* We use the term "semi-circular" for convenience; the curve is, of course, not necessarily of that precise shape.

more showy schemes of the commercial decorator. The adoption of the Continental system of spending some public money on theatres would at least give the architect the means and opportunity of producing something better, which under the present *régime* he scarcely ever has. And the not unnatural result is that the leading architects of the day are scarcely ever called upon to design theatres, and probably have no desire to do so; they know too well what would be expected of them. But all that might be altered if our Government and municipalities took the same interest in theatres as is the case on the Continent.

NOTES.

THE German Emperor opened the new home of the Reichstag on Wednesday last week. We have frequently had occasion to refer to the building, but may here recapitulate a few facts in regard to its history. It is the outcome of an architectural competition limited to Germans. This was in 1882, and there were 196 competitors. The foundation-stone was laid in 1884 by the Emperor William I. Twenty-two millions of marks, or about 1,100,000*l.*, have been spent on the building, and 15,000*l.* more are necessary for the completion of the fresco and sculptural decoration. The architect's competition premium was 750*l.*, he was then engaged at an annual salary of 1,500*l.* during the progress of the works, and receives a fee of 6,000*l.* on its completion, making together about 22,000*l.*, or a commission of under 2 per cent. *without any office or other expenses* on the total amount. Herr Wallot has had to work under most difficult circumstances with constantly-changing building committees. Three Emperors have reigned during the erection of the building, and each ruler's special wishes had to be attended to. The German public and artists are generally satisfied as to the interior of the building, which contains much interesting detail. As to the exterior, opinions differ at Berlin. The academical conception is criticised by many, the "coldness" of the rendering, and the iron and glass cupola. The latter is, to a great extent, the result of the constant change of instructions which actually now leaves the building with two complete sets of foundations for different cupolas. But a few months ago the German Emperor, when at Rome, pronounced the building to be "the acme of bad taste" (Gippel der Geschmacklosigkeit); and he has obviously acted according to this opinion in keeping the architect's name out of all the orders and distinctions given on the occasion, although the Clerk of Works and several of the foremen have come in for honours. This insulting manner of treating the architect will probably have the contrary effect to what was intended. As far as English taste is concerned the building is not likely, we admit, to be much admired; it is a Classic style of a type which we have learned to think somewhat tawdry and unrefined, like much of modern German architecture; yet there is an undeniable largeness and power about the look of the main front and the treatment of its details. The worst point is the aforesaid cupola, and that we candidly think the poorest central feature to a national Parliament House that we know of in Europe. The question is, however, would the Emperor's taste have evolved anything better?

HERR WALLOT'S artistic brethren seem at any rate disposed to do their utmost to show their contempt for the Emperor's conduct towards him, and the "Wallot Banquet," held, on Friday the 7th, at the Kroll Theatre in Berlin, was a most notable demonstration of its kind. The amalgamated architectural societies of Germany, together with several of the senior artistic bodies, had arranged the gathering, at which 650 guests were present, the invitations being limited to architects, painters, and sculptors. The leading architects from every part of Germany were assembled, headed by the presidents of the various bodies. After a number of addresses had been presented to Professor Wallot, who was also the recipient of numerous honorary degrees, &c., Anton von Werner, as president of the Society of Berlin Artists, commenced the long list of laudatory toasts. The annoyance generally felt in artistic circles at the Emperor's decisions as to Herr Wallot and the favouring of the lady-painter Madame Parlaghi, was humorously expressed in a series of *tableaux vivants*, entitled "Wallotria." A very German incident was the introduction of a model of the Houses of Parliament built up entirely in bread and cheese, with sausages for the columns, labelled, "The Acme of Good Taste"; a very doubtful method of signalising "good taste." In one corner of the room was an automatic machine which supplied gold medals "to ladies only"; while on the lost property board of the establishment a large paste-board "Order of the Red Eagle" had been hung and labelled "Forgotten on the 5th inst." Herr Wallott was much moved by the appreciation of his *confrères*, and, in thanking them, laid special stress on the necessity of architects not being hurried by their clients if really good work was expected of them, and in that sentiment at least we can sympathise with him entirely.

THE death of M. de Lesseps closes a career of which the end has been a melancholy contrast to the earlier part, but we confess that we cannot join in the adulations and exculpations with which the Press commentaries on the event abound. A long time before the final crash of the Panama scheme we showed, in an article in the *Builder* of August 6, 1887, the whole category of the engineering impossibilities and contradictions of the scheme, which its promoter, if he had sought and listened to the most competent engineering advice, ought to have been fully aware of. The ostentatious visit of inspection to the site, with the house built for the occasion, and the empty parade of reporting on the condition of the works, was to our thinking an absolutely immoral procedure, a flagrant trifling with the interests of others and of the French nation at large. Whether the legal condemnation of M. de Lesseps was justifiable or not we do not undertake to say; but he certainly was morally guilty of a huge misrepresentation. A number of the daily papers, we observe, including that preposterous person the *Times* Paris correspondent (the *Times* itself is apparently better informed), still cling to the superstition that M. de Lesseps was an eminent engineer who made the Suez Canal. He was not an engineer and had little or no engineering knowledge. He did the diplomacy and financing: that was all.

PROFESSOR AITCHISON will continue, in his next course of Royal Academy Lectures, the subject of the "Advancement of Architecture," which he treated in so interesting and suggestive a manner in his lectures in the early part of the present year.* The first of the ensuing course of lectures will be delivered on Monday, January 28.

IT cannot be said that architectural study is flourishing very much at the Royal Academy, if we regard the small number and mostly rather timid character of the drawings which were exhibited on Tuesday, and contrast them with the kind of architectural drawing which the students' competitions at the École des Beaux-Arts call forth. The subject given for "design in architecture" was "A Public Library in a Town," and Mr. Percy Edward Newton's design, which gained him the Travelling Studentship, is decidedly the best, though the general effect of the large-gabled front is rather heavy. The merits of the design are an effective grouping of the three large windows in the principal story, making the prominent point in the design; a good plan; and a very prettily-sketched bas-relief of the figures in the lower portion of the façade. The defects are (besides the somewhat awkward appearance of the wide gable) the finish of the large oriel window with a flat soffit projecting from the wall face, which has a very awkward look, while this ponderous projection seems also rather to crush the small mullioned window beneath; and the fact that the range of large windows before alluded to, well enough as it looks in the elevation, does not correspond with the treatment of the plan; the windows look like the three windows of the large room running across the front, whereas in fact one of them is a staircase-window, and as such certainly demanded a specialised treatment. The sets of measured architectural drawings, for which the "orangery" at Kensington Gardens was given as a subject, are very good in the main, and two or three are so nearly equal in merit that it must have been rather difficult to award the medal, which has been given to Mr. G. Weald; the second medal to Mr. Pieter Rodeck. A prize for plan only—"Plan of a Building"—(the subject being "A Government School of Art for a large Manufacturing Town,") is an excellent and we think new idea at the Academy; there can be no doubt that the prize has gone to the right competitor, Mr. E. T. Richmond, whose plan is in fact the only one that shows any sense of the importance of aspect in rooms devoted to drawing. For a set of architectural designs (upper school), the subject being a fire-place, the prize of 25*l.* has been awarded to Mr. Henry Seton Morris for a very pleasing design with a broad frieze of carved foliage of Renaissance feeling on the upper portion, and a plain segmental arch to the recess over it. In the lower school the prize of 10*l.* has been awarded to Mr. C. C. Brewer, who in the treatment of his subject (a water-gate) has contrived to invent something novel and at the same time picturesque in the way of a capital, which is not done every day. Hanover Chapel, soon to be destroyed, has been not unappropriately set as a subject for the competition for perspective drawing in outline, the medal for which has been awarded to Mr. Lacey. The designs for the decoration of a public building are none of them remarkable, and the prize one, by Miss Hilda Koe, probably owes its position a good deal to the fine and spirited character of the full-size cartoon sketch of two of the figures; the arrangement of the composition is not very decorative, the large piece of paling occupying a considerable portion of the picture is out of keeping, and there is no harmonious grouping of the figures; in this respect No. 128 is better, but it must be admitted that the cartoon figure is rather weak. The first and second prize works in sculpture are among the best work of the year; the subject, "The Fates," is treated by Mr. F. Derwent Wood with true sculpturesque feeling, the three figures forming a group which seems dominated by one leading idea and forms a complete whole; the only objection we make to it is that the two side figures want some support beneath their feet, both in regard to line and to the sense of architectonic construction, which should always be felt in a sculpture group. There is a great deal of merit also in the second prize design by Mr. F. Thomas, which is less open to criticism, but at the same time less original in composition and conception than that of Mr. Wood. No. 171, with the central figure standing and looking upward, is a spirited group. The Creswick prize (subject, "A Moorland") has been awarded to Mr. Percy W. Gibbs, whose work is decidedly the best in colour; but in this respect

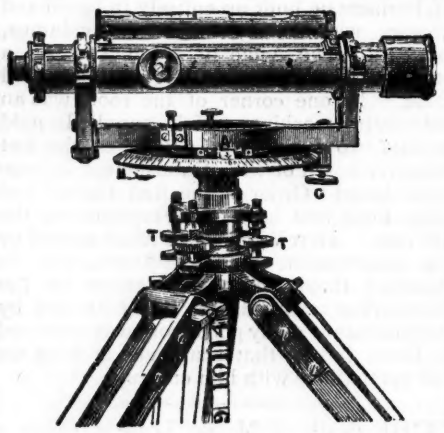
* Printed in full in *The Builder* for Feb. 3, 10, 17, 24, and March 3 and 10.

generally the paintings sent in for this prize are rather above the usual level, and do not exhibit so much rawness of colour as we have encountered on former occasions.

ONE of the most energetic of the various bodies of traders formed for the purpose of keeping a watch upon railway charges, is the Lancashire and Cheshire Conference, presided over by Sir J. J. Harwood. The Council have just issued a circular advising continued resistance to the increased rates, until their reasonableness has been established by the railway companies; and have prepared a form of complaint in order that their members may submit lists of rates objected to, for immediate presentation to the Board of Trade. This course has been adopted in order that advantage may be taken of the Railway and Canal Traffic Act of the present year, which prescribes that complaints of increases must be made within six months of the passing of the Act. This time will expire on February 15, 1895. During the two years which have now elapsed since the companies made their sweeping changes in the rates for goods and mineral traffic, the amounts shown as "traffic accounts due to the company," have, in the case of most of the lines, been steadily mounting up. The London and North-Western "outstandings," for instance, were 167,890*l.* *more* in June last than in June, 1892. This sufficiently indicates the magnitude of the differences between the companies and their customers which still need adjustment, and it is high time that an authoritative decision should be given as to whether or not the resistance to the disputed rates is justifiable.

THE conference summoned by the Board of Trade last week to discuss the question of light railways was a thoroughly representative one, and the proceedings afforded proof that considerable interest is taken in this subject. The President of the Board of Trade, who presided, dwelt upon several aspects of the question, in a speech distinctly favourable to the project, and a sub-committee of the conference was appointed to consider the whole question, and to draw up a report with a view of legislation being founded upon it. The committee consists of Members of Parliament, railway experts, and others intimately acquainted with the subject, and is to be under the presidency of Sir Bernhard Samuelson, who, it will be remembered, personally investigated and reported upon the conditions of transport on the Continent several years ago. The points specially present to the minds of many of the speakers—the relief of agriculture and the better housing of workmen in large towns—hardly come within our province. There is no doubt, however, that the builder and contractor, as well as the agriculturist, would frequently find the light railway very convenient, and it is well that the matter should receive the consideration it undoubtedly deserves. The questions of cost, and the relaxation of the rules regulating the construction, maintenance, and working of railways will be the principal points for the consideration of the Committee. That of the public safety is, of course, largely bound up with these, and will also demand careful consideration. Unless the already over-burdened rates are to be drawn upon, the venture must *pay* to ensure its success; it will not suffice that this or that locality or class is benefited. In some cases, certainly, the existing railways might undertake the construction and working of these lines to act as feeders to their own systems, even without immediate prospect of profit. The tone of the railway representatives at the conference was not unfavourable; in fact, the whole of the proceedings were marked by an absence of hostility.

THE new form of level called the "Gradient-Telemeter Level," * is one of the most admirable inventions in instruments for survey that has been made for a long time. It enables the surveyor to obtain horizontal linear distances without chaining, and levels on gradients without "stepping." An illustration of the instrument is subjoined. The principle of the instrument is that its two vertical axes, the inner and the outer one, are inclined to one another at an angle, instead of being concentric, as in the theodolite. On the telescope being rotated on the inclined axis a vertical dip is given—*i.e.*, a vertical angle is taken, and this angle is expressed on a graduated scale marked on the circle H. Thus, where the levels are to be taken on a falling gradient where the staff falls below the line of the telescope level, the telescope,



having been levelled in the usual manner, is then to be turned on the eccentric axis until a reading on the staff can be taken, when the graduated scale on H will give the angle of deflection passed through to sight the reading on the staff, but as the measurement is made not on the arc direct but on an inclined plane proportionate to it, a great minuteness of measurement can be obtained with a very small possible error. But also, whether on level ground, or on a slope (within certain limits of gradient), the horizontal distance can be obtained, as thus described in Mr. Casella's prospectus:—

"When the instrument is levelled, and the horizontal line of sight is above the top of the 14-ft. staff, proceed as follows:—Loosen the clamp and move the telescope until the index reaches gradient 100, and sight the staff; if the line of sight is still above the staff, move the telescope and index farther until the upper part of the staff is visible through the telescope. Suppose the index is then near Gradient 28, move it again until it cuts exactly Gradient 25, and take the staff reading at that gradient—suppose this to be 13·86 ft.

Then move the index on to G 20 and again read the staff; let this reading be 8·45 ft. and take their difference thus—G25 = 13·86
G20 = 8·45

Diff. = 5·41

Eliminate the decimal point and the horizontal linear distance as in above illustration is 541 ft., without any calculation being necessary for hypothenusal difference or for other reductions. Any pair of Gradients in the list added will give by the difference of their readings the horizontal distance in this manner—the choice of gradients being determined by the nature of the ground."

It may seem that we are here measuring horizontal distances by very small angles, but the multiplication of arc-measurement by measuring them on the eccentric plane and not directly enables the surveyor, as before said, to get a much more accurate result than by direct arc-measurement, and the instrument has, according to a report of a Committee of the Royal Engineers, been proved in practice to give horizontal measurements with an average error of about 2½ in. in a distance of over 600 yds., got by a short series of positions. When it is considered that this can be done over ground where a chain could not be taken, with an accuracy as great as can ordinarily be got by chaining under average circumstances, no more need be said to recommend the instrument to the attention of surveyors.

* Short's Patent: manufactured by L. Casella.

THE lesson to be learnt from the unfortunate panic at the Belfast school last week is the necessity of enforcing an emergency lighting wherever crowds assemble in artificial light. The absolute darkness on the gas going out could have been easily modified by a few oil lamps; these would have greatly helped to assure the audience and assisted the finding of the exits. The cost of emergency lighting is so small that there is no reason why its introduction in assembly-halls, and even churches, should not be made compulsory, in the same way as the arrangement of all doors to open outwards might be enforced.

WE observe that No. 50, Lincoln's Inn Fields is in course of demolition. No. 50 and No. 2, Portsmouth-street, Lincoln's Inn Fields Chambers, retain their original elevations as designed by Inigo Jones, and still bear Queen Henrietta Maria's badges, the rose and the lily, on their pilasters; but the fronts of Nos. 51-2-3 have, apparently, been altered since. No. 2 retains its original red-brick facing, the others have been stuccoed or painted over. The house over the Bear-yard-passage, between Nos. 2 and 50, is modern; Nos. 56, and 61-2-3, are also of later date. The coming change will probably result in a departure from the first design. Thus Arch-row, as first built by Jones, is gradually losing its pristine character.

THE ARCHITECTURAL ASSOCIATION:

The Modern Theatre of the Continent.

THE usual fortnightly meeting of the Architectural Association took place on the 7th inst., in the meeting-room of the Royal Institute of British Architects, Mr. E. W. Mountford, President, in the chair.

Mr. E. M. Flashman was elected a member of the Association.

Several gifts to the library were announced, and votes of thanks were presented to the donors.

Mr. B. F. Fletcher, junior hon. sec., announced that, on and after December 31, the fee for a course of instruction in Studio, Divisions 1, 2, and 3, would be two-and-a-half guineas, including one extra studio subject.

The President stated that satisfactory arrangements had been made for a common-room, which would supply a long-felt want. As soon as the room was suitably furnished and decorated, it would be opened.

Mr. E. O. Sachs then read a paper on "The Modern Theatre on the Continent."

In commencing his paper* Mr. Sachs observed that the Continental differed from the English theatre in being in most cases a public building, built and supported largely out of the public funds, the theatre built as a private speculation or investment being the exception. Continental theatres might be classified as follows:

I. Court theatres.
II. National and government theatres.
III. Municipal or district theatres.
IV. Subscription theatres, with or without court, government, or municipal subsidy.
V. Private theatres, with or without court, government, or municipal subsidy.

The private theatre alone was intended to be a money-making concern.

Court Theatres. — The court theatres were essentially the luxury of royalty, originated and kept up at their expense. The enjoyment of the entertainment given at these playhouses was, however, now mostly open to all comers on a payment for admission, but it rested entirely with the royal owners to what extent the public was allowed to avail itself of the opportunity of entertainment, and at what figure. An exception was only made on rare occasions of national festivity, when the auditorium was thrown open to all comers free of charge, the visitor taking his seat in the stalls or gallery according to the rule of "First come, first served."

Government Theatres.—The national or government theatre was generally run on the same lines as the court establishments, with the exception that the foundation and maintenance of the institution was officially held out to be chiefly in the interests of art and education. The national theatre in a way stood on a par with the national museum or picture gallery; but, being kept up

* The paper having been of unusual length, we are obliged to give the first portion of it in a brief *résumé* only.

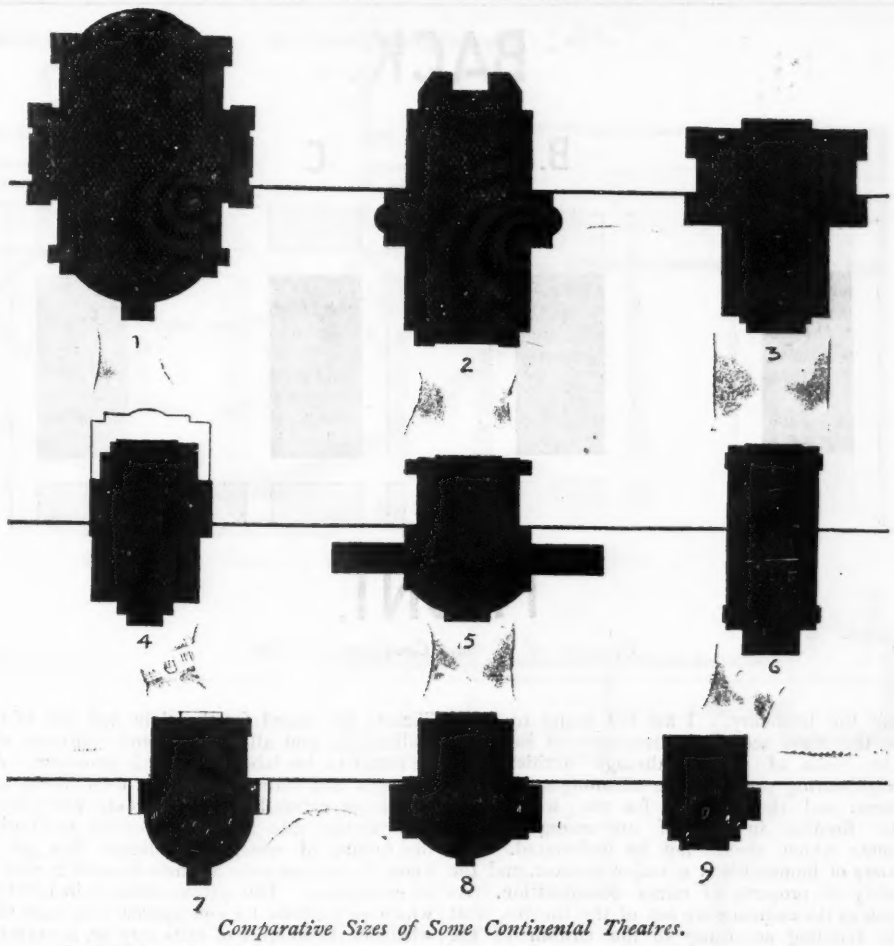
out of the country's taxes, it was practically reserved for the office-holders, the *savants*, and the moneyed, the latter however enjoying the entertainment at a lesser cost than would be the case if they visited an establishment run on money-making lines.

Municipal Theatres.—The municipal theatre was generally intended for educational and recreative purposes; all classes were free to enjoy the entertainment at a minimum cost, and, outside the actual outlay for the building, the ratepayers, as a rule, only had to make up the small difference between the actual expenditure and the amount of admission-money received. There were no profits to make, no great risks to cover, and the inhabitants hence had their entertainment at cost price. Of course, there were endless variations in the management of a municipal theatre. The favourite way latterly had been to put the building and fittings, which had been paid for out of the rates, at the disposal of a good manager, and to allow him a small subsidy on condition that a fixed approved scale of admission and booking charges was not exceeded. Would-be lessees competed for the post, stating to what extent they require to be subsidised. A heavy surety had to be found by the lessee to cover all eventualities. Contracts between the manager and the municipality generally dated for a number of years at a time, and when a new lessee was once engaged, matters as a rule ran very smoothly.

Subscription Theatres. — The subscription theatre was run on lines similar to the municipal institution, with the great difference that its existence was primarily due to a desire on the part of the cultured and the moneyed to satisfy their desire for the luxury of a good play. The subscribers who built the theatre frequently reserve to themselves the privilege of selecting seats, but otherwise their share in the enterprise generally gave them no distinction. Subscription theatres seldom received assistance from Government or Court exchequers, though there had been one or two notable cases in Austria. The municipality, however, generally gave substantial help, partly, perhaps, in the form of a good site, and sometimes in the form of a subsidy to cover the expenses of keeping the building in general repair. The erection of a subscription theatre, generally let off the municipality very cheaply, as an outcry for a new playhouse would always have to be satisfied, sooner or later, and were it not for the voluntary helpers this would be at the entire cost of the ratepayers. The latest variety of subscription theatre was the one which was built and run essentially on democratic lines for the education and recreation of the working classes.

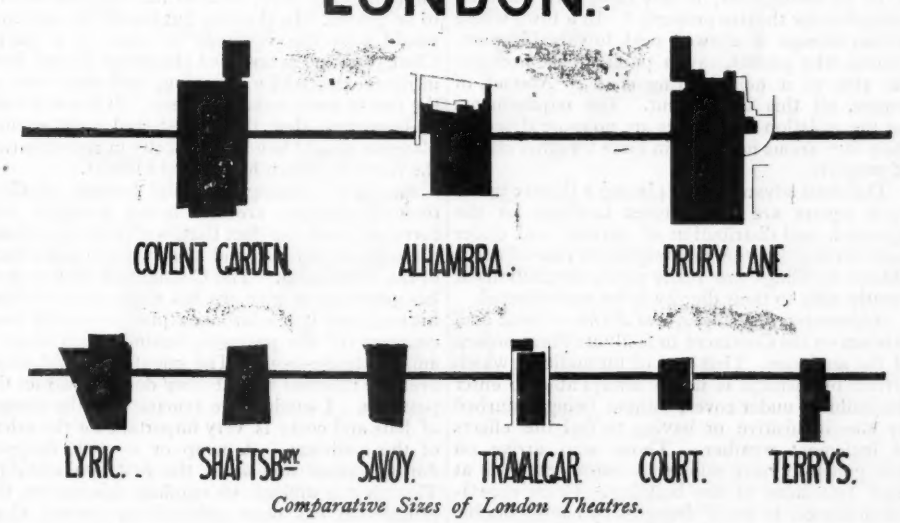
Private Theatres.—The private theatre abroad was managed on precisely the same principles as our own. In exceptional cases private theatres receive subsidies from the Government or Municipalities to facilitate the production of new plays subject to conditions as to the charges of admission, but these cases were very rare indeed. Subsidies by political parties for the furtherance of their interests were, however, not quite so uncommon. Operas were but seldom found in private institutions abroad, the private theatre being practically always the home of the drama. As a rule, municipal and subscription theatres, and to a certain extent the theatres of the minor German Courts, were built both for opera and dramatic performances, which alternated nightly or weekly. The successful planning of these houses depended almost entirely on the clever adaptation of both stage and auditorium to this double purpose—a difficult task indeed, as the requirements for the successful production of a comedy or tragedy were so very different from the essentials of a grand opera.

In regard to the question of architectural design, he considered that this was much more thought of on the Continent than in England. The theatres of England were built as investments mainly, and were utilitarian structures with a little art thrown in as an advertisement. On the Continent the theatrical architect was expected to have a thorough practical acquaintance with the construction of a theatre, but as an architectural designer, not as a mere surveyor; and the architects of the Continent who had been able to satisfactorily complete a modern theatre abroad at once ranked among the first, if not the first, in their profession. Among them he might mention the late Gottfried Semper, in Germany; Baron Hasenauer, in Austria; Von Ibyl, in Hungary; Basile, in Italy; and then there were among the living Garnier, of Paris; Anderburg, of Stockholm; Schrœter, of St. Petersburg; Messrs. Fellner and Helmer, of Vienna, and Seeling, of Berlin. Absolute perfection had scarcely been reached, but something very near it; and there were few buildings, old or new, that could be said to surpass the great Continental theatres of to-day.



Comparative Sizes of Some Continental Theatres.

1.—St. Petersburg Court Opera House.
2.—Paris National Opera House.
3.—Vienna National Opera House.
4.—Stockholm National Opera House.
5.—Vienna Court Theatre.
6.—Budapest Opera House.
7.—Odessa Theatre.
8.—Dresden Court Theatre.
9.—Amsterdam Municipal Theatre.



Comparative Sizes of London Theatres.

General.—Proceeding to consider the plan and construction of the theatres of the Continent, Mr. Sachs continued:—Taken generally, Continental theatres are oblong in plan; in some cases the front is rounded, showing the outline of the auditorium, and in some instances there are wings on either side of the main block. (See comparative diagrams of block plans). The audience is always above the street level, and the building is always distinctly divided into two parts—the so-called front and back of the house. As the modern Continental stage requires great height, the grouping of the block generally shows this part of the building taken up separately as the prominent feature. There is seldom any attempt nowadays to put the whole of the building under one roof. The front of the house is generally distinctly palatial in feeling, whilst the back has always a thoroughly utilitarian look about it.

Site.—There are few modern theatres abroad that do not stand perfectly isolated. Public squares are the favourite sites. Isolation is undoubtedly necessary where the maximum safety against the risks of panic and fire is desired, but I would point out that an audience can be well cared for if only two sides of the block face thoroughfares. Symmetrical planning is to my mind the first necessity for a theatre that is intended to be a safe one. The position of all passages and staircases on outside walls is the second essential, and the possibility of approach to every part of the building from outside is the third. Now all this is only possible where at least two sides of the block are perfectly free. To have the front of the site as well as the two sides looking on the thoroughfares is, of course, a great advantage, but to have the main front one side and the back open would be far worse than to have only the two sides free. Remember the plans of the Ring Theatre, the Exeter Theatre, and other scenes of fearful catastrophes. Legislators abroad require complete isolation, but I will not go so far for London. Our own by-laws, however, only say, "half the boundary open." That is not quite sufficient. The two sides of the building as seen when facing the stage must at least be free from end to end, and that generally means more than

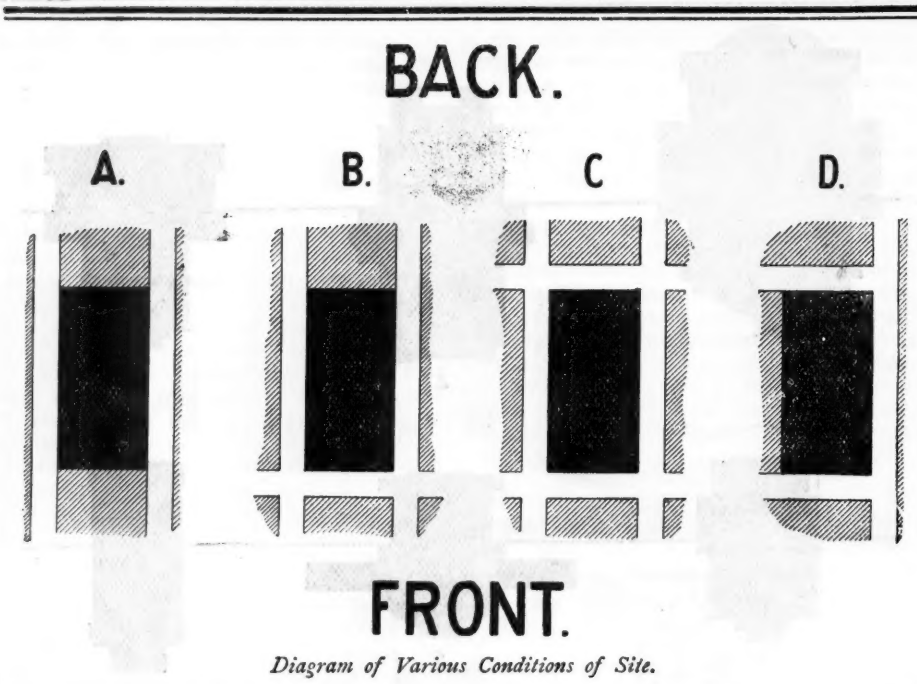


Diagram of Various Conditions of Site.

half the boundary. I am not going to dwell on the many technical advantages of isolation. The risks of panics, through accidents in neighbouring premises, the advantages of cleanliness, and the facilities for the working of the firemen in case of an emergency are points which should not be underrated. The safety of human life is a major interest, and the safety of property of minor consideration. As soon as the audience are out of the theatre, treat the building according to the custom of the country. It is not usual in this country to protect neighbours from one another to any appreciable extent, or to prevent a large risk that catches fire from being entirely gutted by enforcing such protective measures as those required by Continental Fire Acts. This may be wrong or right; I hold it to be wrong, but, in any case, why make an exception for theatre property? In a town where timber storage is allowed next to valuable warehouses, why protect, say, a public-house from the fire risk of a neighbouring stage? Abroad, of course, all this is different. The requirements for the isolation of theatres are no more stringent than the various measures in force for other classes of property.

The chief advantages of placing a theatre on an open square are the greater facilities for the approach and distribution of crowds, and easier manœuvring for the fire brigade in case of need. Where buildings are really public institutions it greatly adds to their dignity to be well situated.

Approaches, Entrances, and Exits.—Great care is taken on the Continent to facilitate the approach of the audience. That part of the audience which arrives by carriage is nearly always able to enter the building under cover, without being disturbed by the inquisitive or having to feel the effects of inclement weather. Those who arrive on foot generally have numerous entrances from at least two sides of the building. Great care is taken abroad to avoid draughts by having double or even treble sets of swing-doors. Excepting in the grandest houses, all playgoers must pass the main vestibule, where the box-office is situated, and this also refers to the visitors who take unnumbered seats. Speaking generally, there are few seats abroad for which one cannot book in advance, and hence the number of tickets sold on the night of the performance is comparatively small. There are also very few unnumbered seats, so that the first-come-first-served system of procuring seats at the last moment does not allow the same scope to the energetic as in this country. If a *queue* has to be formed at all of an evening for tickets, the expectant of all classes generally pass the same counter to ask for whatever kind of seat they may require. Two counters to the same box-office is an exception, and separate box-offices for different parts of the house are only very rarely found. Where a *queue* has to be formed the crowd is generally well cared for and put under cover in an outer lobby or passage, and much attention is given to the arrangements of barriers, so that there need be no unnecessary fatigue.

The symmetrical planning of the Continent allows for the nominal division of the building into "The Right of the House" and "The Left of the House," as seen when facing the stage. Tickets are issued for the right and left of the auditorium, and all passages and staircases will be found to be labelled on this principle. All passages and staircases can be used freely, and the visitor naturally takes the route which leads him quickest into his seat. Besides facilitating the finding of seats, the audience thus get to know the nearest exits at their disposal in case of an emergency. The system common in London, which only allows for one approach to each tier, whatever the number of exits may be, is radically wrong as far as the safety of the audience is concerned, although, no doubt, the theatre lessee will be able to run his house with a smaller staff of ticket-collectors this way. Though all staircases and passages are approached from the main vestibule, they all have separate exits leading direct into the open, without the vestibule having to be passed. In this way but few of the audience would pass the vestibule in case of a panic. Clear planning is favoured abroad as distinct from intricate and tricky planning, and this even at the cost of much valuable space. It is considered all-important that the dullest and most excited playgoer should have no difficulty in remembering the route by which he reached his seat.

Passages.—Among the chief features of Continental planning are the broad passages and corridors, and the fact that, with few exceptions, these passages run round the two sides and back of the auditorium. The Continental theatre-goer has generally to give up his wraps before taking his seat, and it is a favourite plan to provide long counters off the passages, behind which there is ample storage-room. The counters should, however, be recessed so that they do not obstruct the passages. I would here remark that the storage of hats and coats is very important for the safety of the audience. A wrap or a stick dropped during a panic may cause the first fatal stumble. Though it is difficult to regulate this matter, the prohibition has been enforced in several Continental countries, and where ample cloak-room accommodation has been provided the custom has generally become very popular. As to the actual storage of the apparel, the bin-system is the best. As to the cloak-room tickets, the plan of allowing a bin for each seat and then giving the bins the same numbers as the seats has been found very practical. Speaking of cloak-room accommodation, I may add that the ladies are by no means so particular abroad as to their retiring-rooms as in this country, and there is no objection to their being in a conspicuous position. The position of lavatories off main passages, which we would consider faulty, is hence also quite *en règle* abroad.

The passages generally have direct light and are well ventilated. This is essential for the audience to my mind. By opening or breaking the windows on the passage, the noxious gas and smoke which has been known to frequently find its way from a burning stage to the open doors of the auditorium can escape. A crowd will always feel safer as soon as it is near the open air, and in case of the lights going out, the window openings, even on a dark night, more especially if there are some lamps in the streets or courtyards without, will give some light, and with it more assurance. Here I would at once suggest that where passages or staircases look on to the open, a few strong lights outside in no way connected with the service of the theatre will form the best kind of emergency lighting that can be provided. Of course, there must then not be any blinds or shutters.

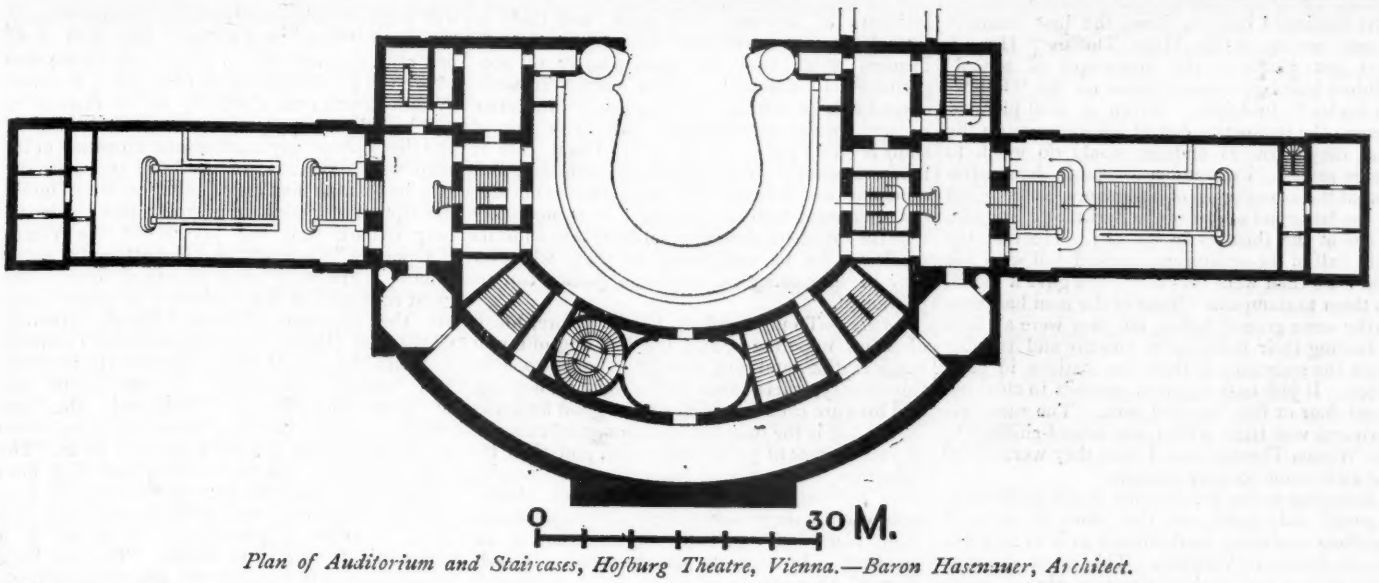
Staircases.—The grand staircase, the great feature of the old Continental theatre, is gradually disappearing abroad, and where we yet find it its *raison d'être* is generally partly lost through there being quite sufficient staircase accommodation provided independent of its existence. The grand staircase is recognised as dangerous for the rapid exit of the crowd, as its pretension and architectural treatment generally necessitates arranging it in broad flights. Flights of staircases which allow more than four persons to ascend abreast create, as has been often explained, a danger of falling or stumbling. Of course there is the make-shift of a light iron railing running up the centre of a broad flight, and thus affording a hold, but I am afraid these iron bars will generally spoil the design of any staircase. At Copenhagen I constantly came across this class of railing, as the theatre regulations require the possibility of a hold for every person ascending stairs. They always looked atrocious.

The Continental architect of to-day has three systems for the arrangement of his staircase: I will call them the central system, the radial system, and the corner system. The former allows of a grand central staircase, generally without direct light, or at the most a top light, and hence without the possibility of natural ventilation. On either side of this grand staircase the minor stairs are grouped. The Stockholm Theatre and the Frankfort Opera House are examples of this system. The radial system allows of the arrangement of the staircases in a row, concentric with a back wall of the auditorium. The staircases to the first tier are then generally on either flank, and are frequently treated as minor grand staircases. The Hofburg Theatre and the St. Petersburg Opera House are examples of two variations of this system—the one with direct lighting, and the other without. The Lessing Theatre at Berlin is an example of the former system; the staircases are grouped on either side of the main vestibule, so as to have direct light. There is no grand staircase, and the stairs leading to the best seats only show a slightly superior architectural treatment. Staircases, in the same way as passages, should always have windows looking into the open. The advantages of the outside emergency lighting, as well as the other points to which I have referred when speaking of passages, hold good as regards the advantages of having staircases on outside walks.

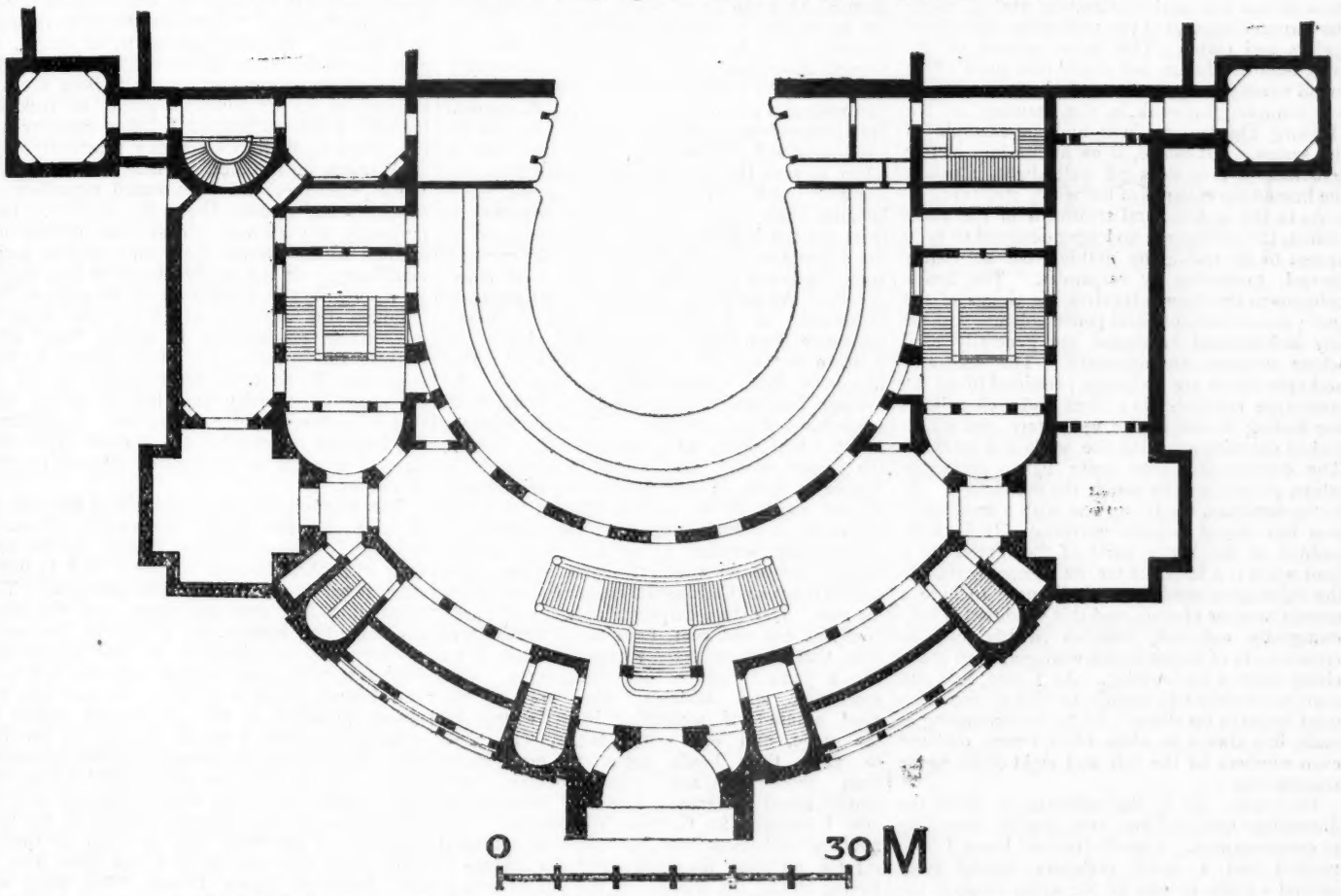
Speaking from experience, I consider that the more persons in sight of one another in case of an emergency, the better the behaviour of the individual. I would hence suggest that, where possible, stairs should be so arranged as to allow a maximum view. I do not approve of the building up of surrounding walls of staircases in the way that limits the view. Being penned in and descending into a well, if I may call it so, creates a feeling of uneasiness.

As an architect, I certainly much regret the disappearance of the grand staircase. This feature lends itself particularly well to an elaborate treatment. I hold it should be retained at any cost in the court and municipal theatres, which, as I explained, frequently serve as assembly-halls. There must, however, be sufficient staircase accommodation independent of the grand staircase, and no doubt some day a skilful architect will find some pleasing way of overcoming the dangers of broad flights. The radial system of staircases is rapidly gaining ground abroad, and I consider it the best for the quick distribution of an audience.

Foyers, crush-rooms.—Perhaps *the* feature of a modern Continental theatre is its *foyer*, or crush-room. We find what I will call the "Hall" *foyer*, the "Group of Rooms" *foyer*, and the "Promenade" *foyer*. The first is generally a spacious rectangular hall, situated over the main vestibule. It serves as the assembly-room for the patrons of the better seats, who stand about and that during the long *entr'-actes* mostly allowed abroad. The hall is often used for the receptions I spoke of, and frequently also for concerts. No concert would, however, be given at the same time as the performance on the stage, as the staircase and passage accommodation would not be sufficient. Where there are groups of rooms, the smaller ones are, as a rule, provided with chairs and lounges arranged drawing-room fashion, whilst the larger one is used as a kind of miniature promenade, the visitors walking round in a



Plan of Auditorium and Staircases, Hofburg Theatre, Vienna.—Baron Hasenauer, Architect.



Plan of Auditorium and Staircases, St. Petersburg Opera House.—Professor Von Schroeter, Architect.

circle. This becomes very monotonous. *Foyers* arranged on these lines cannot well be used for concerts, but small receptions can, of course, be held in them. The Schwerin Theatre affords an example of the large "Hall" *foyer*. The Budapest Opera House shows a set of crush-rooms. The "Promenade" *foyer* is, to my mind, the most satisfactory one; it best fulfils the requirements of those who wish to easily stretch their limbs and meet their friends between the acts. A stroll will greatly refresh the playgoer, especially if he is attending a lengthy Wagner opera or a Shakesperian play. The stroll must, however, not be a monotonous one. There must be a change of scene. The long narrow *foyers* of the Paris or Vienna Opera Houses are very satisfactory, but the curved promenades of the Dresden Opera House, the Vienna Hofburg Theatre, or the Odessa Theatre stand first. The curved *foyer* goes hand-in-hand with the radial staircase system I spoke of. Most of the curved *foyers* have a roomy lobby at either end, where one can step aside for conversation or to watch the scene without creating a block. Speaking of the scene, I would here remark that in the countries I am speaking of the audience unfortunately is not, as a rule, in evening dress to see a play, not even the patrons of the best part of the house. This should be taken into consideration when decorating the *foyers*.

The *foyers* abroad nearly all have balconies or terraces connected with them, and these are much used in the summer. Doors from the *foyers* generally lead directly on to them, and the absence of any lobby has unfortunately caused many a chill. I consider the advantage of being able to step out into the open very great, and this not only for the refreshment of the audience, but also in case of emergencies. Great care should, however, be taken to prevent draughts. In court theatres there is often a small central balcony or open loggia. I spoke of royalty using their playhouse for ceremonies. It is necessary to have some suitable, prominent point from which any demonstration outside the building can be duly acknowledged.

I must now refer to the refreshment-rooms or bars in connexion with the crush-rooms. They are of the most harmless kind, and would even meet with Mrs. Ormiston Chant's full approval, as the contractor need generally only keep a good store of lemon-squash, ice-creams, and cake, to fully satisfy his customers. The liquor licence for the refreshment-room exists, but it is scarcely made use of. Light German beer can be had, but its consumption is comparatively small. The bar, as a rule, is generally only a kind of provisional table at the end of the crush-room, around which, perhaps, a few tables and chairs are arranged as in a confectioner's shop. There is one thing I would here remark—I do not remember ever having seen refreshments served in the auditorium. If refreshment is wanted, the visitor is expected to leave his seat.

Auditorium. — The principal feature of a modern auditorium abroad is the absence of any boxes in our sense. The balcony arrangement has almost become universal, and though there are nominally boxes which allow parties of four, six, or more persons to form a group for themselves, they are not shut off pigeon-hole fashion as formerly. The ante-room for the box is also fast disappearing. The only boxes in our sense are generally the large open ones on either side of the proscenium, opening in the proscenium frame. These are generally reserved for dignitaries or distinguished strangers. The other so-called boxes are simply formed by dividing up the balconies with low partitions, and giving each division its own door. A compromise arrangement will be found in Semper's work. The partitions between his boxes are carried up, but are so cut away as to prevent the disadvantages of the pigeon-hole system without completely destroying all privacy.

When speaking of the arrangement of the auditorium abroad I must point out the ample seating and gangway accommodation provided and the great care that is always now taken to give every two or three rows of seats its own door.

Herr Seeling, I believe, shows the best example of safe seating in his Halle Theatre. Here I must just allude to the advantages of school-children learning to leave rooms on the "follow-my-leader" principle. Given a well-planned theatre, the instinctive exit of the audience on the lines they learnt as children would do much to ensure safety. I remember a notable demonstration of the advantages of follow-my-leader given by the late chief officer of the Berlin Fire Brigade, at one of the theatres in his city. He had the right half of the auditorium packed full with his men; we then went into a box and gave a signal for them to stampede. None of the men had been on the same ground before, but they were all used to leaving their dormitories smartly and running down the staircases at their fire stations in good order. It just took eighteen seconds to clear out about four or five hundred men. The same experiment was tried with 1,400 school-children at the Worms Theatre, and I hear they were out of the auditorium in forty seconds.*

Referring to the construction of the auditorium, I would only point out that there is no such excellent cantilever work abroad as is to be found in our Palace of Varieties. The latest development of iron and steel construction abroad shows the surrounding wall of the auditorium entirely of girders and plates. This is on account of the large number of flues and ducts that have to be found room for in Continental theatres. If you will examine the work in the drawings of the Hófburg Theatre, you will find an example of this system. Of course, if an auditorium of this construction ever does get well alight, it means the immediate collapse of the whole structure.

As to the architectural treatment of the auditorium, the ceilings are no longer designed so as to appear to be resting on nothing, but are visibly carried, preferably by caryatides. The heavy columns in the French theatres are things of the past; almost invisible steel pencil columns without any architectural treatment are generally used where supports are necessary. The decorator and upholsterer are no longer permitted to use the stereotype red-and-gold; blues and rich yellows are finding favour in the upholstery, and white, picked out with gold, for the walls and cornices. The ceilings are kept quite light, preferably white, picked out to match the upholstery. As to the furniture, the tip-up seat with a small side-arm has almost become universal. It is well-padded in the better parts of the house, but a bent wood is a favourite for the cheaper seats. As the buildings abroad are only licensed to hold a certain number of seats, and this condition is very stringently enforced, benches which can be crowded are of no use to the manager, even in the cheap parts of his building. As I said, hats and coats are mostly left outside, so that no provision need be made for these. As to the numbering of seats, it is always in plain block letters, odd and even numbers to the left and right of the house respectively.

Orchestra.—As to the orchestra, of course the dimensions and position varies greatly, according to circumstances. A small dramatic house I once noticed had a string orchestra stowed away behind a grille in one of the upper boxes at the side of the proscenium. These upper boxes are generally almost valueless to the manager, and hidden music is certainly always very fascinating. The grille should be of bamboo; iron gratings would affect the tone of the music.

Well, to return to the orchestra, we generally find it in its usual place abroad just in front of the stage, though generally sunk deeper into the floor than in England. Wagner always made a point of having a sunk orchestra for his operas, and he built one on these lines in his Bayreuth Theatre. What is good for Wagner's music does not, however, hold good for a light opera by Strauss or Sullivan, and hence the new invention abroad of a movable orchestral floor regulated by hydraulics. The first movable floor was completed last month at the new Wiesbaden Theatre. Of course there was much witticism as to the new arrangement, and during rehearsal a wag even pulled one of the levers, so that the whole orchestra bodily rose whilst attempting to play a passage with a gradual crescendo. A spectator tells me the situation was rather comic. The idea of the movable orchestra is, however, very good, and there is little doubt that it will soon be introduced in all theatres which have the great variety of programmes I explained. Most orchestral wells abroad can, of course, be made larger or smaller to suit special requirements. An extra row of stalls is either put in or left out. Great care is taken to provide good exits for the orchestra, and no connexion between the stage mezzanine and the orchestral well is allowed. It is necessary that the orchestra should be quite at ease as to its facilities, for by continuing to play, whatever may be happening on the stage, panics can be prevented.

Safety.—To my mind, as I said before, life is of major importance, and the building of minor consideration, and this especially holds good in this country, where losses by fire count for nothing, and fires are even considered to be good for trade. Where life is the only consideration, perfect means of exit in case of panic comes first, and then the reduction of the risk of panic caused by fire, by good lighting and warming appliances, cleanliness, careful stage management, slow combustion stage plant, and, perhaps, the isolation of the building. As long as the staircases are well-planned, they can be of wood. Fire extinguishing apparatus is almost superfluous. If the property is to be saved, the building must be divided into a number of "risks," both horizontally and vertically; it should be built of slow combustion materials; should have its own well-manned fire-extinguishing appliances, and not be too far from organised outside help. Whatever care be taken to save the audience, it will, however, not count for much if they cannot help themselves by keeping their heads, and likewise whatever is done for the building is but little compared to the advantages of the manager and his *employés* being practical men who are cool in all emergencies. An authority, asked at a Parliamentary Committee of Inquiry to explain London's immunity from theatre catastrophes, simply put it down to "luck." Nothing of the kind. Our immunity from catastrophes is due to the average Londoner's temperament and the clear-headedness of our workmen. The little flare we saw at a first-night, not many weeks ago, close to the Strand would have caused a stampede in France or Italy. I remember seeing an audience up and partly off in panic on account of a few sparks off an electric contact in the auditorium. A lime-light accident as we had it at another theatre last winter would, I regret to say, have made almost any Continental stage-carpenter leave his post. Our stage-carpenter's pluck and smartness, his cap and coat, have saved hundreds of lives that must necessarily have been lost if we had a panic in one of our mouse-traps. Our sportsmen and athletes, who are at the most amused if something goes wrong on the stage, and our young ladies, who seem to keep their heads better in emergencies than those of any other country, have almost saved as many. You will, perhaps, ask how I account for Germany's immunity. It is not clearheadedness there, but simply the continual careful, plodding fire-survey, and the custom of having strong fire-watches of the picked men of the city fire-brigade on the stage which prevents catastrophes. The German stage-carpenter is not a smart man, and the audiences easily take fright.

Stage.—The most remarkable features of the Continental stage are its appliances. Stage-mechanicsm is being treated as a science. Capable, scientifically-trained engineers replace the stage-carpenter of old. The only wood to be found on or about the modern stage is generally in the stage floor, and here hard oak or teak is used. The reform is a *bonâ-fide* one; not merely an adaptation of the old stage to suit modern requirements. The monstrosity of rows of "flies," and footlights which throw their glare upwards on to the actor's chin, instead of downwards on to his forehead, is gradually being done away with. The streak of limelight that used to follow the actor about will soon be forgotten. We have to thank Professor Herkomer, R.A., for the two valuable illustrations showing what I will term "reverse" lighting. Professor Herkomer, who is an expert in scenic art, had the drawings prepared for a lecture he gave on the subject some two years back. There are two systems of *mise-en-scène*, one, if I may call it so, requiring a possible imitation of nature, the other attempting the simplest indication of general surroundings. For the imitation of nature, the so-called "horizon," the careful grouping and the rational method of lighting, are as essential as the scene-painter's handiwork. For the indication of surroundings all attempt at perspective should be avoided. A well-painted background and monochrome drapery, instead of "flies," will suffice. The skill of the first-class engineer will of course only be required where the possible imitation of nature is required. With hydraulics and electricity at his disposal he will be able to supply every want of the artiste, and this without any cumbersome crowding of the stage with all manner of platforms and supports. It is impossible for me to-night to enter into a description of modern stage-appliances. I would only remark that the system of the Vienna "Aspheleia" Company, the first attempt at entire reform, is gradually being improved upon. The great reformers of the modern Continental stage are the engineers, Messrs. Brendt (Berlin), Christofani (Budapest), Brettschneider (Vienna), Lautenschlaeger (Munich), Richter (Darmstadt), and Rudolph (Vienna). As far as the risk of panic and fire is concerned, the iron stage does not, perhaps, have quite as many advantages as are generally ascribed to it. The canvas scenery always remains, and if it does commence to burn the heat engendered will soon destroy everything, and probably the iron roof first. I show a photograph of a fire at a panorama I was at in Vienna. The one large canvas-sheet which caught fire almost immediately destroyed the roof. Canvas burns terribly rapidly and fiercely. Electric lighting is, of course, a great improvement as far as safety is concerned, but absolute reliance on immunity from fire on account of its introduction would be reckless indeed. Some authorities I know consider an iron stage lighted by electricity practically safe. At Warsaw, for instance, I visited the old Opera House, which was being renovated regardless of expense, and found that the architect had purposely not allowed for an iron curtain on account of the electric light and modern stage machinery. Of the disadvantages of iron stages let me mention their effect on the acoustics of the building, the difficulty of giving the stage a comfortable temperature in winter time, and, further, the greater risk of accidents to the *employés*. To improve the acoustics the top of the stage is generally kept full of canvas, and this, of course, means an extra risk. Sprinklers, for instance, cannot be as effective where the streams of water are constantly blocked by rolls of canvas.

This brings me to the protection of the stage in the case of a fire having broken out. Abroad, reliance is almost entirely placed on the firemen with their buckets of water and hydrants close at hand. Next come the sprinklers. The ventilation flue over the stage, and the great divisional iron curtain, are to prevent the spread of fire in the direction of the auditorium. Hydrants, with good reliable pressure and hose and branch attached ready to be run out, are always provided in the Continental theatre in great number, and I would here remark that the cock can generally be opened with one movement only. Of course, the firemen belong to the local brigade and stand under municipal officers. Sprinklers are very common abroad in the new theatres. I had little faith in them for theatre risks until May last, when I saw them tried at the Budapest Opera House. The stage was literally flooded, and the deluge was sufficiently formidable to swamp the largest fire. The rows of sprinklers are generally divided into sections abroad, so that if necessary the force can be localised to one particular spot, and the danger of unnecessary water damage avoided. The ventilation flue, which is nearly everywhere found over the stage, and can be easily opened, is considered a safeguard for the audience in the case of hydrants and sprinklers failing. The smoke and the fumes will be drawn away from the auditorium. The danger of having ventilators is the possibility of their being opened too soon; say before any water has been brought to play on the fire; the flames would then be fanned and the spread facilitated. The divisional curtains are everywhere introduced abroad, and at present the only question ever raised is as to the advisability of having double curtains either in form of second asbestos-protector or a water-sheet. Without a ventilation flue over the stage the curtain will be pressed into the auditorium by the expansion of air on the stage. To my mind it is almost useless to lower a curtain without having this flue. It is true that I have not seen a curtain "blown out," but experiments were made at Vienna with a model of the unfortunate Ring Theatre, and the "blowing-out" repeatedly followed within about twenty seconds of the fire obtaining a hold.

Stores and Dressing-rooms.—The only thing remarkable about the stores abroad is the ample space allowed both where the main stores are in

* We are very glad to find that this practical idea of teaching people how to get out of a building is receiving attention in Germany, though it is entirely ignored here. Some years ago, after a catastrophe arising from panic, we pointed out that if an audience, when fire rendered it necessary for them to quit a building, would have the sense and self-command to file out in order, and march downstairs two abreast like a column of soldiers, they could all be in the street in two minutes without any crushing at all. But the only thanks we ever got for the advice consisted in the receipt of an abusive anonymous postcard.—ED.

the same block as in the audience, and where there is only a secondary store, and the main storage is outside the building. Where main stores are inside there is always a double wall, some 4 ft. apart, between the stage and the stores to prevent spread. In some cities the main stores have to be outside the building. This, of course, means much wear and tear and extra labour for the management. The St. Petersburg and the Paris theatres have very extensive buildings for storage purposes only.

Dressing-rooms are generally well-arranged on the Continent, but the absence of bath-rooms is remarkable. The lavatory accommodation does not come up to our requirements. One thing has always been forgotten in Continental dressing-rooms as regards the safety of the *employés*, and this is the proper arrangements for heating curling-irons and paint-warmers, though very practical electric appliances have been invented. I should recommend the necessary electric appliances for curling-irons and paint to be provided as fixtures.

A People's Theatre.—I must close with a few remarks on a people's theatre. You see the drawings of the Worms Theatre, built from the designs of Herr March, of Berlin.* When the building was put up, Worms had as many as 23,000 inhabitants, that is to say, as many as Winchester or Reigate of our provincial towns, or Gravesend and Richmond of our London suburbs. Worms wanted a theatre. Everybody in the town was ready to subscribe, and the Town Council also found that a little money could be taken from the rates. Everyone was satisfied if the play-bill were limited to drama, and it was immaterial if they were put on to the stage with a full *mise-en-scène* or only the indication of the surroundings I referred to. There is a good deal of democratic spirit in Worms, and hence a distinct division of an audience into sections would not have pleased the inhabitants. The best men of the town were to have the best seats, but they were not to be isolated. An assembly-hall was also required in the town, and as a combination of the two buildings meant a saving both of the initial outlay and the maintenance, a block not unsimilar to those of the national societies I spoke of was decided on. The plans explained themselves. The Bayreuth system of seating was adopted, the lines only being more curved, which does not make it so oppressive for an audience as in the Wagner buildings. The best seats have a central position. All use the same entrances, the same lobbies, and the same cloak-rooms. The best seat costs 3s. 6d., and the front rows, which are rightly considered to be the worst, 6d. For chamber-drama the stage is used with a simple indication of the surroundings; for grand drama there is a full *mise-en-scène*. The stage has a depth of 27 ft., and its width is 48 ft. These dimensions will be found to be between those of our Daly and Haymarket stages. There is no orchestra wall. An organ has been placed at the back of the auditorium, where there is also room for a band, or even a choir if necessary. Exclusive of the seating accommodation in the gallery, there is room for an audience of 1,200, or with it, for 1,400. The auditorium already looks well filled with an audience of about 800 or 900. Again, I cannot go into detail, but I would mention that the audience has thirty-three exits at its disposal, and that the auditorium has a large central top light, so that the hall can be used for public meetings in the daytime, and the cleaning is greatly facilitated.

As to the cost, the whole establishment, theatre, assembly-hall, restaurant, and grounds, with all necessary furniture, fixtures, and sufficient supply of scenery to start the management, would cost just 610,000 marks, or 30,500*l.*, which, with the prices of labour and materials in this country, and the higher value of ground, would mean 40,000*l.* The 30,000*l.* were collected as follows: first there was mortgage money to the extent of 7,500*l.* on the property, lent by the Municipal Bank at 3½ per cent. The interest for this mortgage can be easily covered by the refreshment contractor's rentals, who has the monopoly of catering in the place. Then, 11,500*l.* were collected by voluntary subscription; 5,000*l.* were allowed by the Town Council, and the remaining sum made up out of the proceeds of bazaars, lotteries, and such-like amusements. The Town Council undertook the maintenance of the property.

May I ask, in conclusion, if municipal subscription and people's theatres should not be encouraged by architects as buildings which lend themselves to architectural treatment in the best sense? and can we structurally improve upon our private theatres of to-day by studying what has been done abroad under different circumstances?

The paper was illustrated by a great number of views, elevations, and plans of Continental theatres, which the author must have been at great trouble to get together, and which formed an exceedingly interesting collection.

* See lithograph illustration in this number.—ED.

The Chairman, in inviting discussion, said that the only two modern English theatres possessing architectural merit which occurred to him were the Palace Theatre in Shaftesbury-avenue, and the Memorial Theatre at Stratford-on-Avon. He supposed, therefore, that Mr. Sachs was right in his contention that the theatre-builders of this country did not require art, but simply decoration, and the aid of the fibrous-plaster people. There were a great many present that evening who might be considered experts on the subject of theatres, and amongst them he saw Mr. Roberts, the Chairman of the Theatre Committee of the London County Council.

Mr. Roberts said he wished to thank Mr. Sachs for his interesting paper, and especially for the information it contained on a topic which was rapidly coming into the front of practical municipal politics. He had been for several years in favour of the municipal theatre, which was very desirable, both from the people's and from the architectural point of view. He questioned, however, whether, at the moment, the English people were sufficiently educated for the municipal theatre, and he rather agreed that they were not an artistic people, though he believed they would, in future, become greater theatre-goers than they had been in the past. He believed that Art, of necessity, must be endowed, and he would like to see a municipal theatre, with a school of dramatic art attached; indeed, it was quite possible that the Technical Education Board of the London County Council might subsidise such a scheme. Dramatic art, without some subsidy, would not succeed in this country, and the difficulty the County Council occasionally had with regard to the structure of theatres was that of £.s.d. Every English actor seemed to be anxious to be a lessee, and to have his own theatre and company. The actor had first of all his art, but the structure was to him a secondary consideration, so that it frequently happened they had to ask theatre-owners to spend more money on their structures than they could well afford. The way to get over all this was to have a municipal theatre, subsidised by the Municipality or the State. As a member of the London County Council, he wished to affirm that they had no objection to dramatic art as such, but would rather like to see it encouraged. They must, first of all, consider that the first object should be the safety of the public. At the same time, he did not wish to look upon theatres as places to be burnt, but rather as places of public amusement and recreation, and whatever its construction and site might be, the safety of the theatre rested principally on the absolute watchfulness exercised over the building. The London County Council were anxious to encourage the erection of theatres, though, no doubt, the difficulties in London were very great, and the sites were expensive. He would have been glad if it had been possible to adopt a proposal, which he had strongly supported in the Council, that every theatre should be perfectly isolated. They were unable, however, to carry that out, but they adopted the suggestion that half of the boundary should abut upon thoroughfares. Mr. Sachs had told them that was not sufficient. The proprietors of London theatres felt very keenly the expense to which they occasionally were put with regard to the structures, and the only possible way to relieve them of that expense was by having a municipal theatre, built in a manner worthy of the municipality, put on the same footing as free libraries, and rate-supported, which would be a credit to London and to the architectural profession.

Mr. Mulholland (of the Camberwell Theatre) thought it would be a consummation devoutly to be wished if they could see municipal theatres in their midst. It would give the dramatic art that official countenance and position to which it had hardly attained in this country. At the same time, he did not consider it would foster dramatic art to the extent its supporters seemed to imagine. There was something of the sort in certain provincial towns, where theatres were built by a syndicate, the majority of whose members were on the Municipal Boards, and his experience was that these were about the worst-managed theatres in the country. Then, again, where one mind dominated the management of municipal theatres, an artistic and commercial failure was the general result.

Mr. Leon said that, though a member of the Theatrical Committee of the London County Council, he did not feel competent to speak on the architectural necessities of the theatre. As to having a municipal theatre, he was afraid that many people who were opposed to theatres would object to pay the necessary rates. He would like to have the opinion of the experts present as to the safety of employing iron doors.

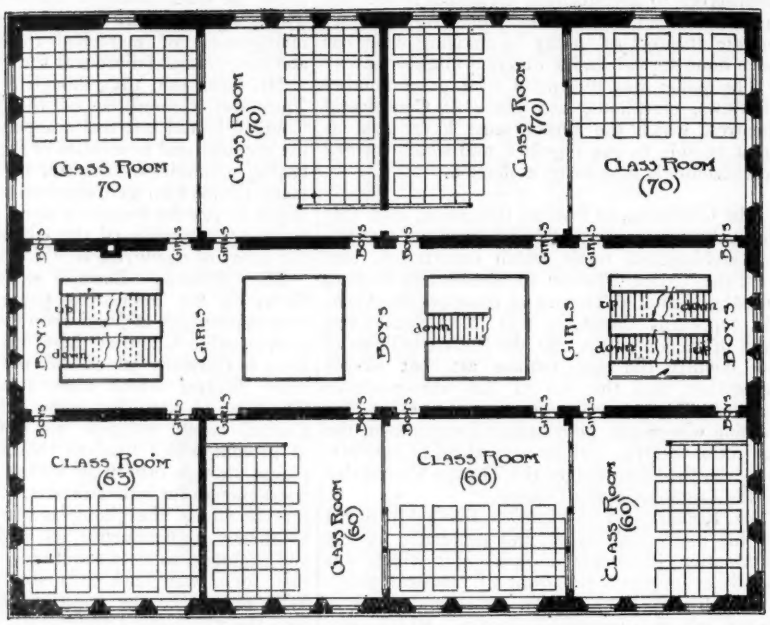
Mr. Thomas Blashill complimented Mr. Sachs on his interesting paper, and for the excellent display of plans upon the walls. It was a remarkable fact that there was hardly a little town in Germany which did not possess one or more theatres which were absolutely isolated. The kind of sites that came before the County Council would astonish his hearers; any piece of ground which touched thoroughfares in two places, though otherwise useless, being deemed good enough for a theatre site. He would venture to advise the young architect in designing his theatre, to commence first with the staircases and passages, so as to see if they were ample, and that there was land to spare for the theatre. With respect to the question of stores, he had seen the whole space underneath the whole stage packed with scenery, while abroad, at the rear of most of the important theatres, could be seen a long sloping road leading up to the back of the stage, for conveying the scenery to and from the store-places close at hand. The County Council had great difficulty in ensuring that the exits should always be used, and it was very dangerous to have an exit door that could not be opened from the inside. Not long since he happened to be passing a theatre between 9 and 10 o'clock in the evening. He was aware that there were means for locking the self-acting bolts there, so that he went and inspected them, and found they were fast. On going into the theatre and mentioning the matter to the manager, that personage said, "I have the key in my pocket, and was just going to send round and have them opened!" Now, if anything had happened that evening the staircases would have been blocked up with the people. He did not agree with Mr. Sachs as to letting people in at several doors; what was wanted was one tier one entrance. The question had been raised as to whether a changeable or a permanent body should have the supervision of theatres. Abroad, so far as he knew, these things were managed by the police, and the first regulation they would make would be that there should be a 40 ft. street round every theatre. Then, again, the theatre manager would be compelled to find accommodation and wages for half-a-dozen firemen, while a variety of other restrictions would be imposed upon him, which nobody would prefer to the present ones.

Mr. W. D. Caröe remarked that the value of sites in Germany was not so great as in London. There was much more to be done in adapting the theatre to the site than in laying down a hard-and-fast line that no theatre should be built which was not entirely isolated. It had been said that the London theatres were the best which could be constructed for the money expended on them. He would like to say from their point of view as artists that in some of these theatres could be seen costly gilding, gewgaws, and upholstering, while if a little real art and quietness were introduced the result would be very much better, and attained at much less cost.

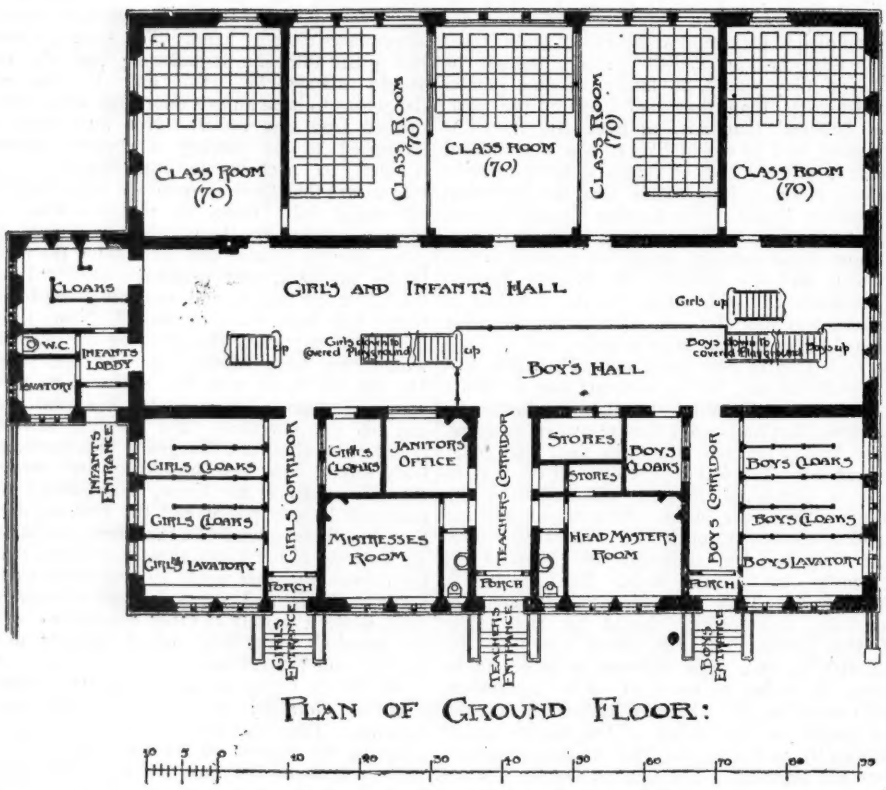
The Chairman said that Mr. Caröe had taken out of his mouth the one remark he had intended to make. He was afraid that Mr. Mulholland, in common with the British public, regarded Architecture as meaning a profusion of ornament and consequent expense. He would like, however, to tell Mr. Mulholland, as representing the managers of London, that good architecture generally meant very little ornament indeed. He wished to express the thanks of the members to Mr. Roberts, Mr. Leon, and Mr. Mulholland for coming amongst them that evening.

The vote of thanks to Mr. Sachs was then put, and was very heartily received.

Mr. Sachs, in replying, said that Mr. Roberts had spoken of having a municipal dramatic school, but he was not aware of such a school existing abroad under municipal subsidy. Court theatres sometimes had dramatic schools, and of these he would mention the Czar's Theatrical College at St. Petersburg, where there were 125 pupils. Referring to Mr. Mulholland's suggestion as to the interference of committees, Mr. Sachs said that, as a rule, he had found abroad



Plan of First Floor (a Mezzanine Floor is interposed between this and ground floor, with additional cloak-rooms, &c.).



PLAN OF GROUND FLOOR:

Competition Design for Craighall School, Leith.—Plans.

that, when the lessee or manager had once been engaged by a municipal authority, he was allowed to do pretty well what he liked. His engagement was usually for a three or seven years' term, and it was only at the end of the term that he appeared before his inquisitors. As to Mr. Leon's remarks on iron doors, to his mind such doors were very bad indeed. An oak door, covered with sheet-iron. and perhaps a layer of asbestos underneath, was better than an iron door, the disadvantage of which was that it would bend in some direction, however well it was hung. As to Mr. Blashill's remarks on stores, the regulation abroad as to scenery was, that not more than sufficient for two plays should be kept in the theatre. In closing, Mr. Sachs remarked that if permanent authorities were to rule the theatres of this country, we might, of course, expect more despotic ways. Where individuals ruled abroad they were always afraid of being "hung."

The proceedings then terminated.

To Correspondents.—Letters of any length, intended for publication in the *Builder*, should be sent, when possible, rather early in the week. A long letter sent at the last moment (*i.e.*, Thursday morning) is often unavoidably excluded or postponed because the available space is already filled up.

Illustrations.

PEOPLE'S THEATRE, WORMS.

THE Worms Theatre is the latest outcome of the "subscription" establishments mentioned in Mr. Sachs's paper on Continental Theatres (see page 428). As will be seen from the plan, the block stands in its own grounds, part of which is used as a beer-garden in connexion with the assembly-hall and restaurant. The site has a frontage of about 350 ft., and a depth of about 220 ft. Quite half the superficial area is covered by the theatre proper.

In designing the building, Herr Otto March, the architect, studied Wagner's Bayreuth Theatre, and the model playhouse proposed by Messrs. Davioud & Bourdais, of Paris. The results, as far as the general practical arrangements and the "sighting" and acoustic properties of the auditorium are concerned, have certainly been very satisfactory, so that the promoters, as well as their architect, may well be congratulated on the successful realisation of their suggestions. The plan explains itself, and we would only point out that the lavatory accommodation does not seem sufficient for an audience of 1,400, whilst the position of the ladies' retiring-room, though this may be thought satisfactory abroad, is much too conspicuous off the main passage. The same remark applies to the Assembly Hall, which is about 70 ft. long, and has the door of the ladies' room at the further end, next to the stage, in the most conspicuous position possible.

Worms, a town of about the size of Winchester, is a very progressive place. Nearly 100,000*l.* are being spent on a harbour and embankments for river traffic, new Municipal Gasworks were lately erected at the cost of 25,009*l.*; and the Municipal Waterworks, constructed at a cost of about 60,000*l.* This is very remarkable, and we should like to know what the rates are. That a town of this size can also afford to raise two-thirds of the 30,000*l.* for their new theatre, by voluntary subscription, seems only to be another proof that the flaunted impecuniosity of the German is rapidly becoming a thing of the past.

COMPETITION DESIGN FOR PROPOSED NEW SCHOOL AT CRAIGHALL-ROAD, LEITH.

This was a competition design. Seats were required for 1,400 children, together with large play-sheds in the basement. From the main street separate entrances for the boys and girls were provided, overlooked by the head master's and mistress's rooms respectively. Each standard had its separate cloak-room on either the ground or mezzanine floors, and the staircases and class-rooms were so arranged that each class-room should have two doors communicating directly with the boys' and girls' lobbies and staircases, so that in all the routes of communication throughout the entire building the sexes should be absolutely separated, except in the class-room, where in Scotland boys and girls are taught together. In the mezzanine were placed the male and female assistant teachers' rooms, commanding respectively the boys' and girls' cloak-room on this floor. For the external work the materials proposed were Craigleith stone for the walls and red tiles for the roofs. The elevations show three blocks of buildings, the staircases and halls being covered by a subordinate roof in the centre, while the class-rooms at front and back show high roofs with gabled ends. The windows of the various fronts were arranged in groups of three lights each. The estimated cost was about 10,000*l.* Morris & Hunter.

STABLES, BICKLEY PARK.

The stables here illustrated are in Bickley Park, Kent, and were built for Mr. J. Wythes, by Messrs. Arnaud & Son, of Bromley, Kent, from the designs of Mr. Ernest Newton, the architect.

The stable fittings were by Messrs. Musgrave, and the clock by Messrs. Gillett & Bland, of Croydon.

The bricks and tiles are red hand-made Wrotham, the stone Portland, and the woodwork of cow-stable, covered yard, &c., English oak. The paving of courtyard is in small granite cubes, with a broad red-brick path all round.

The drawing (trees and all) is as exact as a photograph. E. N.

MISCELLANEOUS SHEET OF ILLUSTRATIONS.

The drawings illustrated on this sheet were all hung in the Architectural Room at the Royal Academy this year:—

HILL WOOTON, WARWICKSHIRE.

This small drawing is a sketch of the house, seen from the stables. The architect is Mr. R. Morley Horder, of London; and builder, Mr. R. Bowen, of Leamington.

COMPETITION DESIGN FOR DARLINGTON MUNICIPAL BUILDINGS.

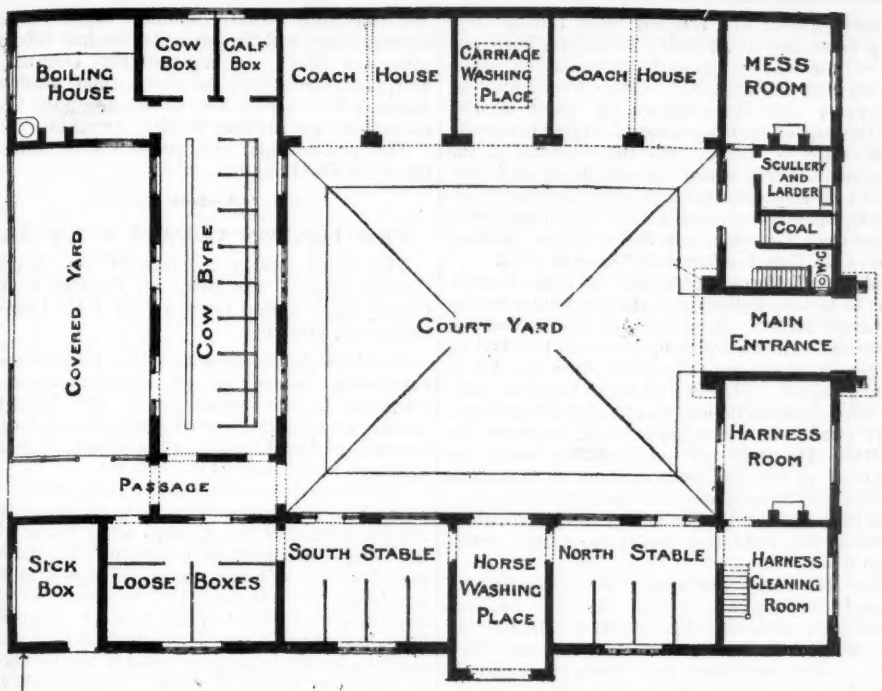
This design, submitted in competition for the above buildings, was planned so as to get the whole of the offices on the ground and sub-ground floors, the first floor being reserved for the council chamber, with committee rooms, the mayor's parlour and reception-room, and the large public hall. One of the main features of the plan is the grand staircase, serving both for the purposes of the council, and for the large hall, instead of having separate staircases, as is most usual.

The large hall (which has no gallery), will hold over one thousand people.

The building was to be faced with a local stone, and the roofs covered with green Westmoreland slates. Arthur S. Jones.

ENTRANCE-HALL AND STAIRCASE.

In this design the hall is intended for general use as a sitting-room, and is in direct communication with all the principal reception-rooms of the house, and also with the domestic offices, through the arch at end of room, the lobby and entrance



BICKLEY HALL STABLES

SCALE OF FEET

Ernest Newton Architect
4 Raymond Buildings
Grays Inn W.C.

being opposite the staircase. The large bay, fitted with upholstered seats, overlooks the front approach to the house, and occupies nearly half the wall space on that side of the room. The walls are panelled in dark oak to the height of the door; the ceiling panelled, and the treatment carried down into the frieze. The chimney-piece is in stone, with brick backing to stove, and tile hearth; the overmantel in panelled oak.

W. T. B.

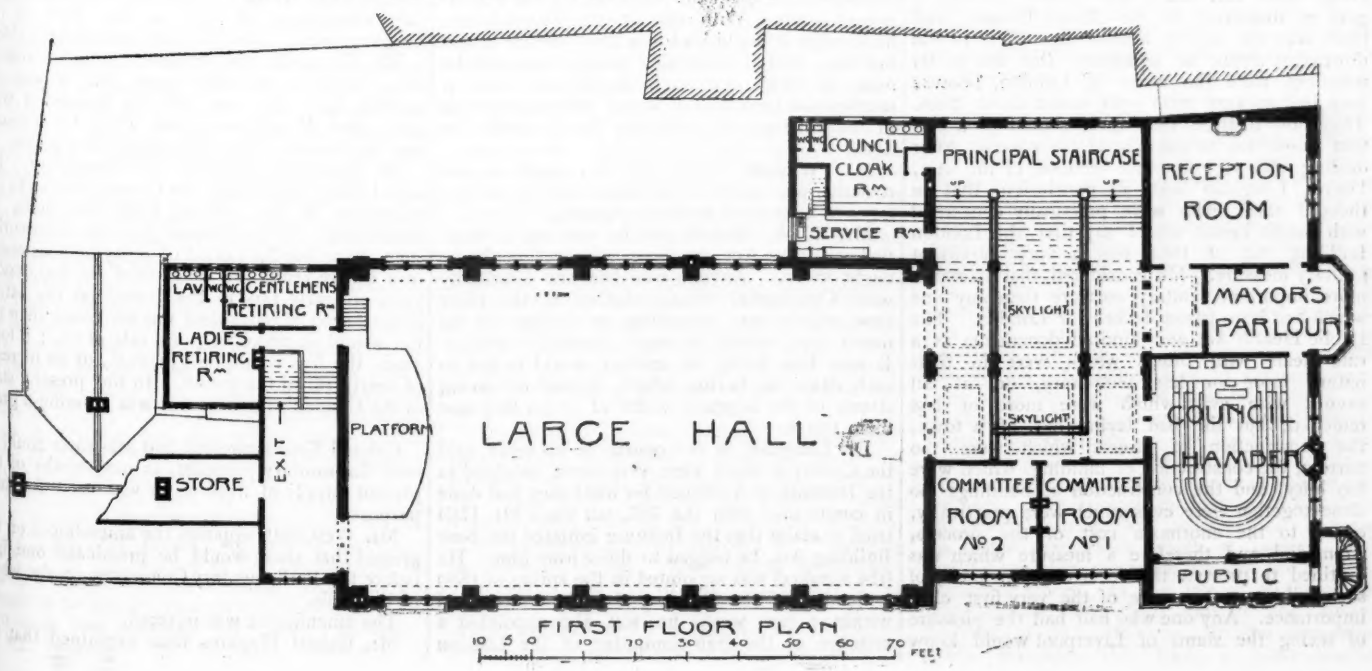
THE SANITARY ASPECTS OF THE LONDON BUILDING ACT.

A SESSIONAL meeting of the Sanitary Institute was held at the Parkes Museum on Wednesday evening, when a discussion took place on "The Sanitary Aspects of the London Building Act, 1894." Mr. Ernest Turner, Chairman of the Council, presided.

Dr. G. Blundell Longstaff, M.A., Chairman of the Building Act Committee of the London County Council, opened the discussion. He said the London Building Act, 1894, was a very extraordinary measure in many ways. In the first place it passed Parliament as a private Bill, repealing, in whole, seven public Acts of Parliament, and partially repealing seven others. In the next place it was a private Bill, consisting of 218 clauses, in four schedules. It was such a large work that prominent and experienced Government officials, up till the last moment, did not think that the County Council was serious in its attempts to pass the measure. That the Act would be free from difficulty in administration he did not for a moment wish to contend, nor that it was free from ambiguity; in fact, the London County Council had already instructed eminent counsel to give them an opinion in one case as to what the Act meant. They were not, however, asking for an interpretation of the Bill as they introduced it, but of the Act as it emerged after going through two Select Committees. He wished to say, in justice to the opposition of the measure, that he was free to admit that the Bill as originally introduced was an impracticable Bill. It was not, if he might say so, intended to be practical in its then form, but he was perfectly convinced that they adopted the right plan in introducing it as they did. Had they attempted to meet the opposition, and to foresee the difficulties, they would not have had a good measure now, because it was not until they were brought into direct contact with those difficulties that they saw where the shoe pinched. He was prepared to go further and say that although the symmetry of some portions of the Bill was necessarily marred by having a number of people going at it in different directions without one consistent idea, the measure in its present form was altogether a better measure than that which was introduced by the County Council this time last year. Dealing first with the definition clause, he remarked that whenever the height of a building was referred to in the Act, it meant the distance from the pavement up to the eaves, or the parapet, or the base of the gable. Section 13 of the Act passed with comparatively little trouble through Parliament, and to his mind it was worth the whole cost of the Bill, which might be approximately represented as 10,000*l*. This was the clause which stated that no person should erect a building nearer than 20 ft. from the centre of the street, unless it be upon the site of an old building. There was very little difference, except in words, between this and the present law. But near the end of the clause there were these important words:—"Provided always that no dwelling-house to be inhabited or adapted to be inhabited by persons of the working class, shall, without the consent of the Council, be erected or re-erected within the prescribed distance to a height exceeding the distance of the front or nearest external wall of such building from the opposite side of such street." There were many areas in London like the Bethnal Green area, where the streets ran from a width of a little less to a little more than 20 ft., and from two to three stories in height. Under Cross' Acts all that could be done was to buy the whole area out and reconstruct it; for this reason, that if they proceeded to condemn those houses and closed them the landlord always had it in his power to re-erect them at a greater height than they were before. The consequence was that the only plan they could adopt in order to prevent people from crowding on the ground was to buy the landlords

DESIGN FOR MUNICIPAL BUILDINGS

DARLINGTON



FIRST FLOOR PLAN

10 5 0 10 20 30 40 50 60 70 FEET

out entirely and have the building reconstructed, the cost of which was over 300,000*l.* Now they would practically be able to force the owners of the land to let out their buildings, if they rebuilt in a reasonable and sensible manner. Referring to the angle clause, he said he had heard it spoken of by some blaspheming adversary as "the Longstaff clause," but he repudiated the charge. The gentleman who had the honour of having originated the principle upon which that clause was based was Mr. W. Goldstraw, Building Surveyor, of Liverpool. Since the Bill became law he (the speaker) had had the pleasure of going over the slums in Liverpool, and the reconstructed buildings under the angle-rule of forty degrees, and he believed that if any architect were to go and see those buildings he would admit that they were as close together as they ought to be placed. As regarded buildings erected hereafter upon streets laid out hereafter, Parliament had granted a space of 10 ft. down to the level of the ground; then they had given an angle of about sixty-three and a half degrees, an angle which was such that the distance from the wall was equal to twice the height of the building. This had the same fundamental virtue of equity that applied to any angle, but it was not quite so much as he would like. He admitted that there were a number of streets which had been laid out so close together that it would be exceedingly hard on the landlord to enforce the first rule. It had been said that this was class legislation; so it was, but there were various things to be said in favour of it. If one was in the unhappy position of being the promoter of a Bill, the goal one aimed at was getting these mystic words "Royal Assent" printed on the first page, and one had to give up a good deal in order to achieve these words. From the point of view of the County Council, beyond that low motive of expediency there were motives which he thought were logically and legally correct, if they were not open perhaps to some economical objection. The offender in this question of class legislation was the Parliament which passed the Housing of the Working Classes Acts. These Acts placed the buildings of persons of the working-class in a different category from those of the people who were not members of the working-class, and Parliament made a difference between the houses of the working-class and those of other people by throwing upon the County Council the imperative duty, under certain circumstances, of (at practically whatever cost) buying out unhealthy buildings of persons of the working-class, and seeing that more suitable buildings were placed thereon. The County Council held that Parliament having insisted upon that, it was only fair that Parliament should give the same authority and the poor unfortunate ratepayers the power to say, "You shall not make any more of these unhealthy slums which we are to buy up and pull down." He held that this was an unanswerable argument to the objection of class legislation in this case. Referring to Clause 45, he said he had no reason up to this point to accuse any one of the eighteen or twenty learned counsel who were engaged cross-examining and bullying him for twenty-nine days of being anything like asleep, but at last they must have got tired and fallen asleep when this clause was passed, because it gave no discretion to the County Council, and there was no appeal against it. Next to the downright slums he considered that the model mansions were the worst in London, because they had so very little open space about them. They now insisted that there should be a certain proportion in the size of the courts. After dealing with various other sections of the Act, Doctor Longstaff said, in conclusion, that he thought those who were practically concerned with public health would say that the London Building Act of 1894 was a very important sanitary measure. He considered that it was a more important sanitary measure than any one which had been passed before for London. The Public Health Act and kindred documents as a rule dealt with things which were in their nature more or less temporary, or, at all events, with evils which were more or less remedial, but the bad laying out of a town, the construction of streets which were too narrow, the construction of buildings which were too lofty, and the construction of buildings too close together were evils which were practically, owing to the enormous cost of the process, irremedial, and therefore a measure which was destined to prevent the recurrence in a city of such evils was a measure of the very first class importance. Any one who had had the pleasure of seeing the slums of Liverpool would know what a gigantic evil resulted there through that city extending at probably an unparalleled rate at a time when practically there was no supervision over the buildings. They would also see on every side the evidence of great activity on the part of the Corporation in trying to remedy that state of affairs, and the evidence of the enormous cost to which the ratepayers of Liverpool had been placed through not having had building legislation at an earlier date. But once bitten twice shy; Liverpool now had a better building code even than London would have in 1895.

Mr. W. Goldstraw (Liverpool) said that London was to be very warmly congratulated upon having obtained such a beneficial Act as the one in question. In his opinion, however, the Bill as originally introduced was better than the Act as finally passed. He did not mean better in point of form, because he was sorry to say it was never very good in that respect, but with regard to the matter. He could not help thinking that if the angle of 45 deg. had been retained as applicable to dwelling-houses, and that the angle of 63½ deg. had been applied to domestic buildings, or some of them, the regulation would have been better than it was.

Mr. H. Percy Boulnois (Liverpool) said he thought it was a pity that the Act had not been more of a consolidation Act, consolidating the whole of the London Acts into one large Bill. The provinces had been undoubtedly ahead of the Metropolis in all sanitary matters, and he thought that fact might be attributed to this, that nearly all the Metropolitan Building Acts were framed under the panic that ensued after a great fire. With regard to the question of carrying the party-wall through the roof, he looked upon that as a harassing and unnecessary measure, and he thought if this were taken out of these Bills and more sanitary provisions were put into them it would be better. The Bill did not receive the support that he ventured to think it might have received from the members of the profession in the Metropolis, and he assumed that the reason was that they felt that the interests of their clients should be protected. With regard to the area at the back of buildings, it was a pity the County Council did not accede to the angle of 45 degs. as a whole.

Dr. Louis Parkes said the County Council had done a very great work in carrying through a large Bill of this sort.

Mr. E. T. Hall said the Institute of Architects did their very best to assist the County Council to make the Act a thoroughly good one, and they were the original cause of the Bill being brought forward at all, although they were at last obliged to oppose the Bill with a view of making it more perfect. It was to be regretted that the Bill did not contain provision for the drainage within buildings. The interpretation of an inhabited room in the Act differed from that of the Public Health Act passed only two years ago. He thought it would have been conducive to the working of both Acts if they had had one interpretation. The great feature of the Act was the angle, and he thought the angle of 63½ deg. was a fair and reasonable compromise, having regard to the immense value of land and of the business which was carried on in London.

Professor Banister Fletcher asked what was considered an adequate provision for the ventilation of courts. With regard to the diagonal line, he thought it would lead to a large amount of bad building, and if something could even now be done by which that angle should stop when it touched the back wall, it would be most advisable in the interests of sanitation that it should be done.

Mr. Wallace Bruce, L.C.C., made a few remarks, and pointed out many of the advantages to be derived from the measure.

Mr. T. W. Blashill said he was not so satisfied with the Act as some people thought he ought to be. Anyone who had any familiarity with Continental cities, whether of the older type, which were increasing, or whether of the newer type, would be much dissatisfied with it. It was like being in another world to get to such cities as Berlin, where, instead of seeing streets of the beggarly width of 40 ft., they saw them 150 ft.

Dr. Longstaff, in the course of his reply, said the County Council were very much indebted to the Institute of Architects for what they had done in connection with the Bill, but when Mr. Hall tried to claim that the Institute initiated the New Building Act, he begged to differ from him. He (the speaker) was appointed in the spring of 1889 a member of the Building Act Committee, and within a few weeks he was also appointed a member of the Sub-committee of the London Building Acts. That Committee began its work six years ago, and for six years he had laboured upon the Bill. As regarded the question of adequate ventilation, he must refer Professor Banister Fletcher to the Chairman of the Committee who put in these words.

The proceedings terminated with a vote of thanks to Dr. Longstaff.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday at the County Hall, Spring Gardens, Sir John Hutton, Chairman, presiding.

Salisbury Estate, Strand.—The Establishment Committee brought up an adjourned report in reference to the suitability of the Liberator buildings on the Salisbury Estate, Strand, for the purpose of the Council, an abstract of which appeared in our issue of the 17th ult.

Mr. Fardell moved, "That the matter be referred to the Committee, with an instruction that the officers of the Council shall confer with the Official Receiver in companies' liquidation, in order that a fuller report in regard to the possibility of adapting the buildings to the requirements of the Council may be supplied." He said that the Council had increased the staff of clerks by 280 in six years, and if the Liberator property was bought it would accommodate 253 more persons than was represented. It could accommodate 771 persons against 482, and including the eastern block it could accommodate 1,365.

Lord Monkswell seconded the amendment.

Mr. Dickinson, Deputy Chairman, said the lighting arrangements was one of the great faults of the building. Many of the rooms were so dark that they would be useless for anything except storage.

The amendment was lost and the report agreed to.

The Purchase of the Water Companies.—The Parliamentary Committee reported that they had prepared eight separate Bills for the acquisition by the Council of the undertakings of the eight Metropolitan Water Companies. The matter being one that required special and undivided attention, they referred it to a Sub-Committee on which members of the Water Committee and two members of the Finance Committee served, and for some months past the Sub-Committee had been engaged in the preparation of the Bills. These they had now submitted, and their general principles were such as they could advise the Council to approve. They recommended: "That the eight Bills, entitled Lambeth Waterworks (Transfer) Bill, Southwark and Vauxhall Waterworks (Transfer) Bill, Kent Waterworks (Transfer) Bill, East London Waterworks (Transfer) Bill, New River Waterworks (Transfer) Bill, Grand Junction Waterworks (Transfer) Bill, West Middlesex Waterworks (Transfer) Bill, and Chelsea Waterworks (Transfer) Bill, for the transfer to the Council of the respective undertakings of the eight Metropolitan water companies, be approved; that the seal of the Council be affixed to petitions for leave to bring in the Bills; and that the Bills and petitions be deposited, pursuant to the Standing Orders of Parliament, with such necessary alterations (if any) in the Bills as the Parliamentary Committee may consider desirable."

Mr. Campbell, who opposed the recommendation, moved as an amendment that it was expedient that only one Bill be proceeded with now; and he suggested that when the Council had experience of one, they might then go on.

Mr. Beachcroft seconded the amendment. He asked what information the Council had as to the operation of the sinking fund that must be established. If the Council got the waterworks, then, assuming the period of repayment extended over ninety years, the loss would be 120,000*l.* a year, or nearly 1¼d. in the pound on the rates; if the period of repayment was six years, then the loss would be 289,000*l.*, or a rate of 2d.; if forty years, the loss would be 539,000*l.*, or an increase of nearly 4d. in the pound. In the present state of the Council's finances this was running a great risk.

Colonel Ford suggested that sea-water could be used for sanitary purposes, as nine-tenths of the present supply of fresh-water was used for such purposes.

Mr. Westacott opposed the amendment on the ground that there would be practically one fight before the Parliamentary Committee on the whole of the Bills.

The amendment was rejected.

Mr. Bassett Hopkins then explained that the

Bills provided that the Council on the one side and the water companies on the other should enter into a voluntary arrangement for a transfer of the companies' undertakings. Failing any such agreement, another clause gave Parliament the power to say that the undertakings should be transferred after a certain date named in the Bills, and that all the rights and liabilities of the companies should pass over to the Council upon terms which took the form of arbitration. It was further provided that there should be three arbitrators, one appointed by the Council, one by the companies, and the third by the Board of Trade. He detailed the powers of the arbitrators, and went on to contend that the Bills were financially sound.

Mr. Westacott, while believing that it was the duty of the Council to take over the undertakings of the water companies, did not think Parliament would give them the power unless they paid a fair and reasonable market price for them.

The recommendation, after some further discussion, was agreed to.

Jobbing Work and the Works Committee.—Paragraphs I. and II. of the Fire Brigade Committee, which we printed last week, page 413, gave rise to some discussion. The Committee recommended that the additional expenditure be sanctioned.

Mr. Ward moved an amendment that the following words be added :—"And that as the Works Committee has had no opportunity of estimating for the above works, the architect's original detailed estimate, together with any subsequent additions, be sent to the Committee for report to the Council as to where, in the opinion of the Works Committee, the work as carried out differs from that estimated for either in quantity or price."

Lieut.-Colonel Ford seconded the amendment.

Mr. Weir, M.P., said he understood the Works Committee did have information, and he could not understand the excess on the works. Either their architect was incompetent or the Works Committee was incompetent.

Mr. Westacott asked if those were the only cases where there was an excess of charge, as he understood that there were no fewer than 600 cases where the cost had exceeded the estimate.

Mr. Taylor said the work as carried out was really in accordance with the specifications. He considered it unfair to make these charges against the Works Committee.

Mr. Urquhart, on behalf of the Committee, agreed to accept the amendment, and, replying to Mr. Westacott, said it was a fact that in 600 cases there were discrepancies.

After further discussion the amendment was further amended, so as to include all jobbing works, and this was agreed to.

After transacting other business, the Council adjourned soon after eight o'clock.

ARCHITECTURAL SOCIETIES.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—The third ordinary meeting of this Association was held on the 30th ult. in the Exchange Building, Birmingham. The President (Mr. William Henman) occupied the chair. After the election of new members, Mr. F. R. Farrow, F.R.I.B.A., of London, read a paper on "Preparation for the Examinations held by the Royal Institute of British Architects." He said that for the future all desirous of attaining the distinction of an Associate of the Institute would have to pass through three progressive stages of examination, of which he gave details, together with hints as to the best books to study. The Final Examination of the new course had not yet been held, so that they were rather in the dark as to what form it would take; but one thing was certain, that it would be much more difficult than the Qualifying Examination in the past, as the Intermediate Examination must be considered about equivalent to that; and he advised students to make the most of what Mr. Bidlake and the Birmingham Association had to teach them, and said he did not doubt that if candidates would take advantage of these and other facilities provided for the education of architects in Birmingham, they would have no difficulty in getting through.—Thanks were voted to Mr. Farrow for his paper.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of this Society was held on the 11th inst. at the School of Art. In the absence of the President at the commencement of the meeting the chair was occupied by Mr. F. Fowler, the Treasurer. The following new members were elected by ballot:—Mr. George Y. Gillham, Sheffield, as Associate; and Mr. Thomas H. Robinson, Sheffield, as student. An interesting lecture on "Wentworth House; Historical, Descriptive, and Illustrative; with practical observations on some materials used in the building," was given by Mr. William Dickie. The lecturer referred to the early ancestry of the Fitzwilliam family, and carefully traced the history of Wentworth Woodhouse from the middle of the sixteenth century to the present time, giving descriptions of alterations and additions at various times, dwelling upon the great work of 1741-1743, with the names and interesting particulars of the various architects concerned. He then exhibited plans and elevations of the buildings, and explained in detail the dimensions, proportions, and decorations of the principal apartments, showing detail drawings of the work. The drainage of the mansion, the cellar and water arrangements, and the ventilation of the main sewer were fully described. An interesting account of the mode of casting the roof lead, gathered from implements in existence at Wentworth, was given, and specimens of lead from the roofs were exhibited. Samples of iron used in the work of Inigo Jones were produced, and slag concrete and other materials. Mr. E. M. Gibbs, President, who had arrived after the commencement of the meeting, proposed a vote of thanks to Mr. Dickie, and complimented him upon the excellent manner in which he had preserved the drawings in book folios, and thought in that respect architects generally might with advantage take a leaf out of Mr. Dickie's book.

LIVERPOOL ARCHITECTURAL SOCIETY.—On the 3rd inst., Alderman P. H. Rathbone read before a meeting of the Liverpool Architectural Society, held in the Law Library, Union-court, a paper on "The Economical Value of Fine Architecture." Permanence of prosperity for any city depended, said the lecturer, upon the use it made of its accumulated wealth. The building of handsome buildings was one of the best of those uses. History proved it. They could not get a sense of citizenship out of an accumulation of meanly-built and ugly streets. Public buildings, especially, formulated the nobler and purer ideas of citizenship. They were enduring witnesses to the intellectual life of the city. Liverpool was filled with intelligent men, fitted to become the leaders of civilisation, and the question before them was whether it should sink into a mere port, in which no one would live except from necessity, or take its place among the memorable cities of the world. Small as its beginnings were, he indulged the hope that the School of Architecture would save Liverpool from becoming the mere poverty-stricken asylum of labourers and artisans, for in these days of telephone and telegraph the ablest minds would settle where there was most intellectual life, leaving the hewers of wood and drawers of water to inhabit the backyards and outbuildings of civilisation. The buildings of the city would have much influence in helping Liverpool to become and to continue a great intellectual centre. Our great steamers cost half-a-million each and would not last fifty years. A building costing that sum would last for centuries. For us to proceed in this direction needed nothing but the will; we had the wealth in abundance, but at present preferred to spend it in building docks for Buenos Ayres. We had a population which, with instruction, was capable of making the best artisans in the world, and the sure means of saving ourselves from the disastrous vicissitudes of trade was to strive to become a centre of skilled crafts. Mr. J. M. Hay, in proposing a vote of thanks to Alderman Rathbone, pointed out that the difference in total cost between making a building an abortion and a work of art was small, and, compared with the actual value added to property by good architecture, was a mere nothing. Good architecture was, therefore, one of the wisest of investments. Alderman Rathbone, in replying, said the point referred to by Mr. Hay was illustrated by St. George's Hall. That building cost about 250,000*l.* Another 50,000*l.* spent in completing it would treble its value as a work of art.

CARLISLE ARCHITECTURAL, ENGINEERING, AND SURVEYING ASSOCIATION.—A meeting of this Association was held in the Town Hall, Carlisle, on Monday, when a paper was read by Mr. Edwin B. Newton, City Surveyor's Office, Carlisle, on "Gauging the Flow of Water." The lecturer commenced by giving a brief summary of the history of the science of hydraulics, mentioning the earliest experimentalists and the results they arrived at. He then gave comparisons of the various formulæ in use at the present day, referring especially to those by Darcy and Rutter, pointing out the shortcomings of all, and expressing the view that to obtain a correct formula capable of universal application what was needed was accurate and careful observations of actual flow, and notes made of the various atmospheric and natural conditions prevailing at the time the experiments were made. He then described the various forms of current-meters, and detailed the operations necessary in gauging the flow of a river by means of floats, &c. The lecturer then explained the methods of gauging water by means of weirs of various shapes, and gave as his opinion that rectangular weirs were best for moderate flows. The several formulæ for calculating the discharge over weirs were explained. The lecture was illustrated by diagrams and various instruments lent by the City Surveyor of Carlisle, Mr. W. Howard-Smith.

THE GLASGOW SCHOOL OF ART.—The opening lecture of a series on architectural study in the Glasgow School of Art was delivered on the 7th inst., in the Lecture Theatre, by Mr. Wm. J. Anderson, A.R.I.B.A. The lecture was a *résumé* of the evolution of architecture from the earliest times to the end of the Gothic period. It was pointed out that the history of architecture, like all other history, teaches that there is no such thing as continued and maintained progress and advancement. Thirty centuries before Christ some of the grandest architectural works in the world were erected—*e.g.*, the temples of Karnac and Luxor, buildings which, at least in the qualities for which they are distinguished, have never been equalled. Besides that of Egypt, another important source of influence was the art of Assyria. Those met in Greek work, which, making use of the forms of both, combined also the majesty and dignity of Egyptian architecture with the freedom of picturesqueness of the Assyrian, and added great intellectual refinement and grace. The arch freely used by Egyptians, Etruscans, and Greeks in underground and engineering work was only raised by the Romans to the dignity of a constituent part of the architecture. The Roman also made a more extended use of the vault and dome. Byzantine architecture was described as being merely the later architecture of Imperial Rome transferred to Byzantium, and there coloured and influenced from the East. The Byzantine architects continued the development of the dome. After the break-up of the Roman Empire decline in every respect followed in the western part, and for centuries art was crushed out of existence till the rise of the Lombard Romanesque. The progress of this style in Italy and Germany was noticed, and the contemporary phases known in this country as Saxon and Norman. The lecture concluded with a short account of some of the English cathedrals, illustrating the history of the Gothic style at home.—*Glasgow Herald.*

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—On the 5th inst. a meeting of this Association was held, Mr. C. H. Compton in the chair. It was announced that, upon the retirement of Mr. Allan Wyon, F.S.A., from the office of treasurer through illness, Mr. E. P. Loftus Brock, F.S.A., who had been one of the hon. secretaries for many years, had been elected to the vacant office. Various objects of antiquarian interest were exhibited, and Mr. J. T. Irvine called attention to some hitherto unnoticed carvings in Rothwell Church, near Leeds, where they have been built up into the internal walls. They consist of stone slabs, covered with interlaced work, probably of Saxon date. Mr. Park Harrison, M.A., showed some drawings of sculptured detail, of early date, in the triforium of Salisbury Cathedral, removed probably from Old Sarum when the cathedral there was demolished and reused as old material. The first paper was by Miss Russell, of Galashiels, on the use of branches in the construction of fortifications in ancient times. After referring to various classical authors, the statements of Polybius were dwelt upon in detail. These had reference to the superiority of the Romans over the Greek soldiers in the construction of fortified enclosures rapidly of boughs and branches. The ancient earthworks in England, and especially in Scotland, were noted. In these the feeble earthworks which at present exist would have been powerless without the security of palisade fences. In the Isle of Rothesay are many earthworks which indicate the former existence of such additions. In the discussion which followed, the Rev. J. Cave-Browne

described the defences raised by the Hill Tribes of India, and the native fortifications of Burmah, which are, alike, formed of earthworks and palisading. A paper on the Fleur-de-Lys of the ancient French Monarchy, by M. J. T. de Radds, was read, in the author's absence, by Mr. de Gray Birch, F.S.A.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution on the 11th inst., Sir Robert Rawlinson, K.C.B., President, in the chair, the paper read was on "Colliery Surface-Works," by Mr. Edw. B. Wain, A.M.Inst.C.E.

INSTITUTION OF JUNIOR ENGINEERS.—At a meeting of this Institution, held on the 7th inst., at the Westminster Palace Hotel, Victoria-street, Mr. H. J. Young in the chair, a paper on "Waterworks and their Appliances" was read by Mr. William Mallock. Dealing first with source of supply, the author described generally the formation of the soil over or through which the rain passed on its way to the two classes of source, above-ground and under-ground, and reference was made to the systems adopted by the larger cities throughout the kingdom for obtaining their supplies. Diagrams were exhibited showing the arrangements and appliances in connexion with London water-works for well-sinking, boring, and driving headings into the chalk to the under-ground sources. The supply derived from London wells was gradually being exhausted, as was proved by their fall of water-level to the extent of 10 in. average per year; the above-ground source of supply would, however, be sufficient for many years to come. The geological formation of the Thames watershed, comprising an area of 3,500 square miles, was described, from which it was noticed how that on account of the extensive natural filtration it undergoes before passing to the river, the Thames water was so much purer than the river-waters of the north country, where the soil was generally impervious, and, therefore, unfit for filtering processes. In considering the question of storage, to which great importance was attached, various schemes were investigated applying to London, including Hunter & Fraser's, which had been accepted by the Royal Commission, and a proposal of the author's, whereby pumping expenses would be avoided, and other advantages obtained. A detailed account followed of the latest practice in regard to the different appliances in connexion with the processes through which the water passed from the intake, through screens, subsiding reservoirs, filters, pumps, service-reservoirs, valves, and mains to the consumers. The paper concluded with some remarks on waste prevention, which could best be secured by the adoption of Deacon's meters. They were being largely used by the more advanced water companies, and resulted in a great saving, in many cases of as much as over 50 per cent. In the discussion which followed, Messrs. R. N. Newman, Walter Hunter, F. L'Estrange, F. Fisher, B.Sc., W. Powrie, S. Boulding, and others took part.

THE CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—On Wednesday last week the members of this society visited the works of the East London Water Company at Lea Bridge, and were shown over by the chief engineer, Mr. W. B. Bryan, the various engine-houses, turbine-houses, and other works of this ancient water company. The members inspected four Cornish pumping engines, three sets of triple expansion Corliss-gear engines, and a new set of triple expansion overhead marine-type pumping-engines, two compound horizontal pumping-engines, and four Hercules turbines used for pumping. The members were also shown a rotary pump made by the Drum Engineering Company, working under a head of 200 ft., which had been tested, and was stated to have yielded an efficiency of 80 per cent.; many and various apparatus for facilitating communication between districts; the working and governing of the engines and pumps; amongst these being notably that of the electrically worked stop-valve; and many ingenious contrivances designed by Mr. Bryan. The members were also shown over the new boiler-house; inspected the sluices, the tubular aqueduct over the canal, and had a very interesting description given to them by the engineer of the working arrangements of the company, the difficulties met with and overcome in obtaining water from their wells; and also were shown some of the original receipts of Messrs Bolton & Watt, for money paid to them at the end of last century for coal saved by those pumping-engines that had been erected by them. ——The opening of the Session took place on Thursday. The President, Mr. C. T. Walrond, A.M.Inst.C.E., on taking the chair, read his address, and took for the subject of it "The Latest Development of Various Branches of Sanitation." Mr. Walrond began by drawing attention to the fact that the increased attention now being bestowed upon sanitation was largely due to the rapid growth of towns. He then referred to the improvements in the chemical treatment of sewage which are taking place. Next some recent forms of precipitation tanks were described, the "Candy" tank being specially alluded to, and its advantages for the ready removal of sludge without the necessity of drawing off the sewage or interrupting its flow were specially pointed out. The "Webster process" for the purification of sewage by direct electrolysis, the Hermite system of treating town sewage, not in bulk, but in detail, by a supply of electrolysed sea-water laid on to every house for disinfecting purposes, were described; to the latter system he saw serious objections. The Scott-Moncrieff system of bacteriological purification, which opens up prospects of a revolution in present methods of sewage disposal in the near future, was then considered. Mr. Walrond passed on to the subject of the use of "Distributors" in getting rid of town refuse; then to recent methods of preventing the filtration of water into or out of sewers; to the increased use of the transmission of power from central stations for automatically raising sewage; and to the problem of sewer ventilation, the key to which appeared to be, in his opinion, the diminishing of the number of ventilating openings, regulating their size, and using artificial means for extracting foul air from the sewers, for which latter purpose the exhaust air from "Shone Ejectors" could be usefully employed. Coming to the question of house drainage, the speaker recommended that soil-pipes as well as drains should be subjected to tests by the Surveyors to Local Authorities, and urged the desirability of an authoritative set of standard tests and conditions, compliance with which would entitle a house to be registered according to its sanitary state, the register to be open to the public on payment of a small fee.

Correspondence.

To the Editor of THE BUILDER.

COMMERCIALISM IN ART.

SIR,—Having been much exercised in mind by Mr. Richmond's treatment of the commercial principle now prevalent in Art, at the Exeter Congress, I was much rejoiced to see it met so completely and reasonably in the current number of the *Builder*. There is yet a further consideration which may well be taken into account in dealing with the subject. High Art owes its rise to the principles of commercialism. In all countries the art of painting especially has been promoted and developed through the demand arising from the commercial prosperity of the people. Periods of war, depression, or poverty, are not such as to favour the production of works of art. Prosperity, on the other hand, creates a demand for them. Art of old was appreciated and valued at money's worth. Hence it became worth while for many of the better-educated class to devote themselves to painting, and to excel in it. None could really take it up in earnest without becoming deeply interested in it, and doing his best, apart from the payment. But the payment was a matter of course and of necessity. And "tall talk" upon the terrible inferiority of the art-element in the preponderating mass of what is produced as Art in window, reredos, or mural decoration at the present day, will go for very little. Although it is the demand which has created it from slow beginnings, the inferior Art will still command only the comparative price of inferior Art, which alone is within the reach of the many. And this, again, is but the exact parallel of what has gone before.

The painter's "best" in the Middle Ages, under ordinary conditions and circumstances, was but little, if any, better, either in effect or in pay, than the "best" which is produced by inferior painters now. There were then (as now, we may hope) true artists who produced work that should stand the test of ages, and should serve as models for distant, if servile, approach to imitation. But it must be simply and supremely Quixotic to contend for the supremacy of high Art to the exclusion of all attempts to supply the demand, and to fill the void, occasioned by a long period of depression and lack of appreciation. In order to rise to the highest condition of cultivation men should be associated with none but the most perfect and most beautiful of objects. This is universally admitted. But this highest cultivation is not within the reach of all, not even of the majority. And it certainly is not taking the highest ground to deny to all the less cultivated in the land the enjoyment and the benefit to be derived from the civilising influence even of the lower forms of Art, so far as they may become available for the purpose. This would not tend either to the welfare of Art, or to the happiness and edification of the people. Mr. William Morris claims to be a Radical in his art-teachings. With all my Conservative proclivities, I suppose I may be set down as something worse.

WILLIAM WHITE, F.S.A.

TEWKESBURY ABBEY.

SIR,—There are two points in the architectural history of this building which you may think proper to notice more fully in your republication of the interesting series of abbeys now in hand.

The fourteenth-century ambulatory and chapels round the apse, which when complete no doubt included a Lady Chapel, were not thrown out from the fourteenth-century presbytery and apse, but from the Norman building, which at the time must have been intended to remain. As regards the ambulatory this is very clear. Its vaulting ribs spring from the old capitals of the Norman columns, and the masonry of its vaults is lower than the fourteenth-century arches of the apse. When the Norman arches were taken down, and more lofty openings made, this masonry was exposed, and it was imperfectly faced with a diaper pattern. I pointed this out in a letter to the *Builder* several years ago, and now enclose a copy of a paper which I read before the Worcester Diocesan Architectural Society in 1877, which deals with this and other important points. At that time excavations were made, and I found the foundations of the third of the successive eastern Lady Chapels, which was built in the fifteenth century. The tradition that it had been 100 ft. long was found to be correct.

As to the thirteenth-century chapel built against the end of the north transept, the use of which has not, you consider, been satisfactorily explained, I will venture to say that there can hardly be any room for doubt in the matter. The original Norman eastern Lady Chapel would be for the use of the monks, and would be quite inadequate for the numbers of the laity who desired to participate in the services in honour of the Blessed Virgin. It was for these that the great Lady Chapels were built in so many English and Continental churches. Besides the Elder Lady Chapel at Bristol, which you notice, there are very many examples of chapels placed on the side of the transept or choir, opposite to the monastic buildings, so that the laity could have free access to them. There is a Norman or Transitional example at Worksop, and a fourteenth-century example at Ely. In French churches, such chapels were sometimes detached. At Durham, the Lady Chapel was built at the west end after an attempt to put it at the east end had been miraculously prevented. At Glastonbury, the west end seems to have been chosen from a sense of its greater suitability.

But when the thirteenth-century Lady Chapel at Tewkesbury was partially destroyed, it had become the practice to place such buildings at the east end of a church.* The fifteenth-century Lady Chapel was accordingly built here. Suitable arrangements could easily be made for its use at different hours by the monks and by the laity. From an architectural point of view this position is clearly the best.

THOS. BLASHILL.

P.S.—I cannot now refer to my notes, but I think the thirteenth-century chapel attached to the north transept must have fallen before the fourteenth-century apsidal Lady Chapel was built.

BALL-ROOM FLOORS.

SIR,—Your correspondent may be interested to know that ball-room floors are sometimes mounted on springs. There is a floor of this nature in Cork, and the experience of all who have danced on it is that the rhythmical motion of the floor renders dancing much less fatiguing than on a rigid one.

Cork. ARTHUR HILL, F.R.I.B.A.

* The Secular Canons of Hereford had adopted this position as early as the thirteenth century.

"BALL-ROOM FLOOR" AND "CAST-IRON TANK."

SIR,—A long way back amongst the volumes of the *Builder* (I regret I have lost my reference note and have to trust to memory), your correspondent, whose letter, page 418, contains an inquiry about ball-room floors, will find a minute description of the floor of a hall built in the country by an enthusiastic military officer for the use and benefit of his neighbours, the villagers, whose houses were near his residence. The principal special points of construction were that the whole floor was supported on lump rubber springs, such as are (or were) used for tramway cars, and that the flooring surface did not quite extend to the walls, but was allowed a small space around the edges, so that not only was elastic motion in a vertical direction provided for, but a slight horizontal motion, or swing, was permitted. The result was, according to the report of the major, quite satisfactory.

I do not know what reputation Willis's Rooms had for the construction of its floors for dancing, but when the building was pulled down it was found that the construction of the floors was somewhat elaborate and unusual, and it was surmised that much trouble had been taken to render them acceptable to the votaries of Terpsichore. Mr. W. Johnson, builder, of Wandsworth Common, who had some hand in the demolition, reported this to me, and would no doubt be able to give your correspondent further particulars.

Another floor which is much appreciated by dancers is that of the Bromley Vestry Hall, E. There is nothing peculiar in its construction, except that the surface is of teak. The bearings are divided into lengths of about 10 ft. by walls and rolled iron joists, the floor is then wood-joisted with 8 in. by 2½ in. cut out of balk Dantzic, covered with inch deal laid diagonally, traversed, and finally laid with ⅝ in. teak in narrow widths, waxed. Dancers come long distances to exercise upon it. The teak was not laid with any view to dancing, but to comply with the wishes of those connected with a Vestry in a neighbourhood connected with shipping interests; and all ship-men swear by teak for all purposes. It is indeed a fine wood for a floor, as well for use and wear as for effect of colour and tone. Good selected Honduras mahogany, without wax or polish, would, I think, make a very useful and effective floor surface.

Re "Iron Tank" letter (same page), "Clerk of Works" probably does mean what he says, viz., a "large cast-iron tank," notwithstanding the editorial note at foot of his letter suggesting galvanised wrought-iron tank. Large tanks are usually of cast-iron flanged plates, bolted and tied. The best method is to imbed the projecting flanges of bottom either with tiles in Portland cement, or with Portland cement concrete, and to finish the floor smooth with trowelled cement, with slight fall to wash-out outlet. As to the vertical sides, it is better to clean them of all detachable scale and rust, and cover them either with Portland cement-wash or lime-wash, which should be occasionally renewed when the tanks undergo periodical cleansing.

ARTHUR HARSTON.

IRON WATER-TANKS.

SIR,—If "Clerk of Works" will give his tank *while wet* a good coating of cement wash I think he will be satisfied.

I presume the water is for domestic use.

J. B. WILSON, C.E.

LARDERS.

SIR,—I frequently notice in plans, illustrated in your paper, that are admirable in every other respect, the larders having their approach direct from the sculleries. Surely this is very objectionable for obvious reasons. It is always better to have the larder opening either directly from the cool side of the kitchen, or (still better), from a passage or lobby outside it. I think your own expression of opinion on this point might be of value to your numerous readers.

E. SWINFEN HARRIS.

The Student's Column.

DETAILS OF RURAL WATER SUPPLY.—XXIV.

WELLS.

WELL-SINKING on a large scale for rural water-supply is of rare occurrence, and the details, which necessitate an extensive knowledge of practical geology, are so numerous and complicated that the subject cannot be dealt with satisfactorily within the limits of these papers. The principles and methods have been comprehensively dealt with in several standard treatises upon the subject, and to these the student must be referred. As, however, wells may be said (and often unfortunately so) to form the most frequent source of supply for villages, groups of houses, and isolated dwellings in country districts, some details upon this branch of the subject will be given here.

Wells may be classed under three heads:—

1. Shallow or Surface Wells, fig. 56.
2. Deep Wells, fig. 57.
3. Artesian Wells, fig. 58.

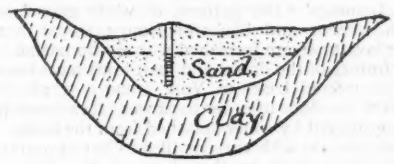


Fig. 56.

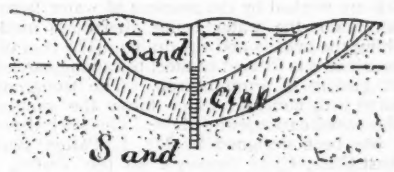


Fig 57.

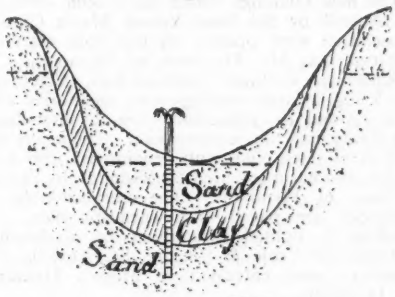


Fig. 58.

In Chapter 2 whilst referring to the disposal of the rainfall, it was stated that "a portion of the rain sinks into the ground and forms the underground reservoirs in which wells are sunk, issuing again at the lowest lip as springs." When a porous stratum such as sandstone or chalk, which has the power of retaining water in its pores or fissures, is superposed upon an impervious stratum, such as clay, the porous stratum will be saturated and the water held up as in a basin, to a plane inclining towards the lowest lip which is generally the outcrop of the impervious stratum. If the porous stratum is adjacent to the surface of the ground, the plane of saturation is generally at no great depth; and if a well is sunk to a point below this plane, water will collect in it and stand at the level of the plane. This constitutes a shallow well. Under these circumstances the level of the plane of saturation is very variable, being rapidly affected by the rainfall. As the rainfall in its passage into and through the ground on account of its highly solvent nature, takes up and carries with it any impurities, more particularly of an organic nature, which it meets with on its way, and as the distance through which it has to pass before flowing into the well is usually very short, shallow wells are dangerous sources of water supply for domestic purposes. It is only in such cases as where the well is in an isolated position, in a rural district, and sufficiently removed from any possible source of pollution, that its use in this connexion should be permitted. Wells of this description must be properly walled in or steined with stone, brickwork, or concrete, and in the two first cases the joints should be made thoroughly watertight with hydraulic lime-mortar or cement. The top of the wall should be protected by a raised kerb where a bucket is used for drawing the water, and fitted with a proper cover, or where the water is drawn by means of a pump, the top of the well should be domed or flagged over. The bucket system has an advantage over the pump in affording greater facilities for cleaning out the well, which should be done once a year. On the other hand, the pump-well through being permanently covered over is less liable to pollution from the surface. As the water in shallow wells is usually of a soft nature, the suction-pipe of the pump should not be composed of lead.

Deep wells are those which are sunk through an impervious stratum to a porous or water-bearing stratum beneath it; the water being held up in the latter by an impervious stratum underneath it again. The terms deep and shallow in connexion with wells do not therefore refer to the actual depth of the well, and a shallow well may, in fact, be deeper than a deep well. Deep wells, if properly constructed, constitute excellent sources for domestic supply. The rainfall which feeds them is collected upon the exposed surfaces of the water-bearing stratum, which are usually situated at a distance from the site of the well, and becomes purified in its passage through the ground. On account of its prolonged contact with strata at some depth below the surface, deep well water usually contains a considerable amount of mineral matter in solution which it has taken up during its passage; this gives it a hard character. Deep wells have also the advantage of being slowly affected by the rainfall, and the level of the water in them is fairly constant. It is of paramount importance that any percolation from the beds above the impervious bed through which the well is sunk should be effectually prevented. This is done in a manner similar to that described for shallow wells. The precautions at the surface are the same in both cases. The level at which the water will stand in a "deep well" depends upon the elevations of the collecting ground and the line of overflow, the principles upon which it depends being the same as already described in reference to the virtual slope or hydraulic mean gradient of water flowing in pipes.

There is a continuous flow of water in saturated strata from the collecting area towards the outlet which is usually the bed of a river, or the shore of a lake, or the sea. The surface-level of this moving body of water, which may be called its virtual slope, depends upon the resistance of the materials which compose the strata through which it flows, the presence of faults or dislocations, and the physical features of the land; technically, the first of these includes the other two.

Should the point selected for sinking a deep well be situated beneath the virtual slope of the water in the saturated beds, then, when these beds are reached, the water will rise to the top of the well and (were it not for the resistance of the air) above it to the virtual slope at that point. This would constitute an artesian well. The name is derived from Artois, a province of France, where this form of well was first brought into general use. It will be evident to the student that the artesian well is only a special condition of the deep well. As in wells of this description the water rises of its own accord, either so as to overflow, or to within a certain distance from the surface, it is only necessary to dig the well to a sufficient depth to allow of the pump being fixed within 30 ft. of the lowest level to which the water rises, and to afford sufficient storage capacity. The remaining portion may consist of a small perforation bored down to the required depth which is lined with an iron tube, or occasionally left unlined when it passes entirely through rock.

The Abyssinian or tube well (fig. 60) is economical and satisfactory where the ground is suitable and where the water stands, or by deeper sinking may be made to rise within 30 ft. of the surface of the ground. This well consists of iron

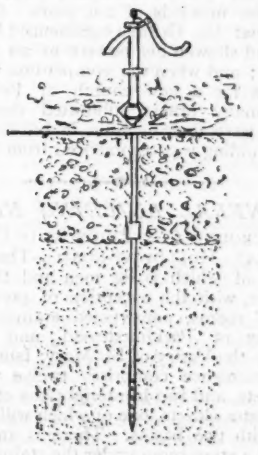


Fig. 60.

tubes from 1¼ in. diameter, in sections, which are driven into the ground, the bottom section, which is perforated, having a steel point to enable it to penetrate. As the tube is forced down into the ground a fresh section is screwed on to the upper end of the last tube until the desired depth is reached. A pump is then fixed to the top of the composite tube, and the work is complete. An advantage possessed by this form of well is that it can usually be withdrawn and driven again in a new situation. Percolation of surface-water

between the lining of the well and the ground through which it is driven is also prevented.

The following is an estimate for an Abyssinian tube-well in gravelly ground, where driving-plant is provided and a well-driver, sent by the contractors to superintend fixing, labour being provided by the Authority:—

Estimate.

Depth, 30 ft.	£	s.	d.
30 ft. 1¼ in. Abyssinian Tube, hire of Plant and Well Driver	4	18	0
3-in. Abyssinian Column Pump, with Foundation	2	15	0
Well Driver's time travelling, say one day		10	0
Ditto Ditto Railway Fares	1	1	0
Carriage and Cartage of Plant and Materials	1	0	0
Labourer, 1 day		2	6
	£10	6	6

For further information upon this subject, the student is referred to a pamphlet published by Messrs. Le Grand & Sutcliffe, Bunhill-row, London, E.C.

The cost of digging wells depends upon the nature of the rock or soil through which the excavation has to be made, and upon the precautions which have to be taken to prevent the sides from falling in, and in dealing with the surface water.

There are two principal methods of constructing the steining of a well in treacherous ground. The first is to excavate to a certain depth, and then to build the lining of the well to the surface of the ground upon a wooden ring or kerb. The excavation is then continued for a further depth, and the kerb, with the cylinder of brickwork, or other material, allowed to sink. The walling is then continued again to the surface, the excavation and walling being carried on alternately until the required depth is reached. Iron cylinders in sections are also used, the principle being the same. The second method consists in underpinning and building beneath each section of the steining as constructed.

Half brick rings are usually sufficient, especially when laid in cement. The courses should break joints, and the bricks should be radiating.

It is always advisable to have a puddle or concrete backing to the lining of a well, especially near the surface.

OBITUARY.

MR. HERBERT A. GRIBBLE.—We have to record the death, on Saturday last, of Mr. Gribble, the designer (though not, we believe, the superintending architect throughout) of the Oratory Church at Brompton. Mr. Gribble was born at Plymouth in 1847. When quite a boy he showed very marked talent for art. He was early apprenticed to Mr. J. Norman, architect, of Plymouth, and at the age of twenty came to London to study at the National Art Training Schools, South Kensington, when he gained a National scholarship and many other awards, including gold and silver medals, for designs in architecture. About this time he became chief draughtsman in the office of the late Mr. Joseph Hansom, with whom he remained for upwards of ten years. It was soon after this that Mr. Gribble commenced business for himself, and showed his powers as an architect of great skill; and when the competition was opened for designs for a new church at Brompton, he amongst many others submitted designs. The committee gave their decision in his favour, and in 1880 the building was commenced from his designs.

GENERAL BUILDING NEWS.

UNDERGROUND CONVENIENCES IN PARKHURST-ROAD, NEAR HOLLOWAY-ROAD.—These conveniences, one of which is for men and the other for women, are, with the exception of portions of the attendants' rooms, constructed entirely under the carriageway of Parkhurst-road, and have been erected by the Vestry of St. Mary, Islington. The men's convenience comprises twelve urinals, five water-closets, and two lavatories; the other containing four water-closets, one of which will be free, and lavatory with two basins. There is an attendant's room, and a store-room under the staircase, in each convenience. The brickwork has been built in Portland cement. The interior is faced with white-glazed bricks with a plinth and dado of blue-glazed bricks, the whole being laid with very fine joints. To prevent the soaking of water into the brickwork, a horizontal damp-course has been laid in all walls at the floor-level, and the back of the exterior walls has been twice coated with a boiling mixture of tar and pitch. The drains are formed of glazed stoneware socketed pipes, jointed with cement and made watertight. They are ventilated into chambers in the footway and up the lamp columns at each end of the refuge in the carriage-way. Jennings' "Midland" water-closets have been used, and they are flushed by three-gallon cisterns. The basins are fixed by bolts embedded in concrete, so that a basin can be replaced without disturbing the tiling of the floor by simply taking off the nuts and placing another basin over the bolts, which remain fixed permanently in the concrete, and replacing the nuts. Charles Smith & Sons' indicator locks have been fixed on the doors of the water-closets. The urinals are Jennings' Club pattern, of white glazed ware, with screens and backs of Rouge Royal marble. The lavatories are furnished with tip-up basins. All the frames of the doors and partitions have been set on chamfered bases of York stone 3 in. above the level of the floor in order to prevent their lower parts being injured by water splashed from the hose. The floors are laid with vitreous tiles. Cast-iron gratings have been fixed in the risers of the stairs and openings formed in the rear walls of the water-closets, so that a current of air may pass through the conveniences to the Blackman Exhaust Fans, which are worked by the pressure of water from the street main, the water being afterwards used for flushing the urinals and the drains. The roof of the conveniences is formed of steel troughing carried by built girders of wrought-iron. The troughing is covered with concrete, which forms the foundation of the paved carriageway above. The work throughout has been designed by Mr. J. Patten Barber, M.Inst.C.E., Chief Surveyor to the Vestry, and carried out by Mr. Geo. Jennings, sanitary engineer, London; the cost amounting to 2,460*l*.

Y.M.C.A. BUILDINGS, ST. AUSTELL, CORNWALL.—The new buildings which have been erected at St. Austell by the local Young Men's Christian Association were opened on the 29th ult. The architect was Mr. H. Snell, of Plymouth. The ground-floor contains entrance-hall, cloak-room, and lobby, a large reading-room, secretaries' office, lavatory, and a gymnasium. On the first floor is the library and the lecture-room. The main staircase is of pitch-pine, with ornamental iron balustrades, and has a coloured-glass window by Fouracre & Son, of Plymouth. The entrance-lobby and lavatories are paved with encaustic tiles. The building is lighted throughout by electric-light, installed by Veale & Co., of St. Austell. The contracts were entrusted to Messrs. Hunkin & W. H. Smith.

HOTEL, WALLSEND.—A new hotel has just been built at Wallsend close to the north side of the Newcastle and Shields turnpike. The new structure has been constructed from plans designed by Mr. Hope, architect, Newcastle and Shields. The contract for executing the whole of the work was placed in the hands of Mr. Robert Bell, builder and contractor, and monumental sculptor, who executed the mason work himself, and sublet the plumbing to Mr. Hedderley, the plastering to Mr. J. Johnstone, the painting and decorating to Mr. S. Parr, all of Wallsend, and the slating to Mr. Edward Beck, of Newcastle.

BOARD SCHOOLS, ARDSLEY, NEAR SHEFFIELD.—A block of schools at Hunningley-lane, Stairfoot, built from designs of Messrs. Kaye & Twist, architects, for the Ardsley School Board, at a cost of 4,573*l*. 11s. 9d., exclusive of site, was opened on Monday. The school is built on the Central Hall system. Five class-rooms open off a central hall, and each of these gives accommodation for sixty children.

CHURCH, ALEXANDRIA, DUMBARTON.—St. Mungo's Episcopal Church at Alexandria, which has been in course of construction during the past twelve months, for the Vale of Leven Episcopal Mission, was opened on the 9th inst. The building has been constructed with the view to future extension, but meanwhile only the nave of the church has been built, the six arched bays on each side and the chancel at the west end being cemented over. The size of the church in its present form is 65 ft. by 30 ft. The roof is bound together by five arches resting on carved stone corbels. The wood is red pine stained and varnished. The church is seated for 250. The architect was Mr. J. M. Crawford, Dumbarton; the builder, Mr. James Barlas, Alexandria; and the joiner, Mr. James Shearer, Alexandria.

PEOPLE'S PALACE FOR GLASGOW.—On the 6th inst. the Glasgow Town Council considered and confirmed a project for the erection of a hall, art gallery, and recreation-rooms for the east end of the city. The plan which has been adopted shows the arrangements of a composite structure which in one part affords accommodation for a museum and gallery of art, and in the other provides an area which can be utilised alternatively for the display of flowers and sub-tropical plants, or for popular musical entertainments, or for other purposes of assemblage—the available floor space being sufficient to give standing room for over 3,000 persons. The art gallery is placed within a building three stories in height, designed in the style of Italian Renaissance. The frontage measures 120 ft., and the depth of the building is 43 ft. The entrance, through a triple archway, gives access to the staircase leading to the museum, on the first floor, and also to doorways which communicate with the winter garden. On either side of the staircase is a large room available for recreation, occasional exhibitions, or administrative use. The museum floorage extends over the whole length of the building, without sub-division, and is lighted from all sides as well as from the roof. The art gallery, on the upper floor, is reached by two stairways, one at either end of the building. The floorage is uninterrupted by partitions, and occupies the whole interior, with the exception of the light wells of the museum below. Provision is made for the display of pictures and other objects of art. The adjoining winter garden is a large structure of iron and glass, 180 ft. long and 120 ft. in width. The interior is laid out so as to be available as a promenade, as well as a place for the exhibition of floral and arboreal collections. There are three separate entrances to the winter garden, in addition to the two accesses communicating with the adjoining building. The committee's ideas have been interpreted by Mr. A. B. M'Donald, M.Inst.C.E., who is responsible for the plans of the building.

FOREIGN AND COLONIAL.

FRANCE.—The Société Centrale des Architectes has appointed its council and staff for 1895. M. Charles Garnier has been elected President, MM. Corroyer and Achille Hermant Vice-Presidents.——MM. Bœswilwald, Daumet, and Charles Garnier have been appointed, by the Department of Commerce, members of the Jury to consider the designs for the 1900 Exhibition. The jury will include thirty-one members, of whom ten are to be elected by the competitors themselves. The exhibition of the designs is expected to be open in the course of next week.——Thirty-five designs have been sent in competition for the new asylum proposed by the municipality of Paris at Ville d'Evrard. Among the competitors are MM. Courtois-Suffit, Bréasson, Rousse, Felix Calinaud and Lequeux.——The Prefecture of the Seine is about to open an inquiry (as prescribed by law) in regard to the construction of a large penitentiary at Fresnes-les-Rungis, to replace the prisons of Mazas, La Roquette, and Ste. Pélagie.——Next week there is announced, at the École des Beaux-Arts, a public exhibition of the works of the late sculptor, Joseph Chèret, who died a few months ago.——Mdme. Demont-Breton, who has recently received the decoration of the Legion of Honour, has been elected president of the "Union des Femmes Peintres et Sculptors," in place of Mdme. Léon Bertaux, who has resigned.——The inauguration of the new buildings for the Faculté des Sciences at the Sorbonne, which was to have taken place last week, has been postponed.——The Municipality of Paris has made definite arrangements for the organisation of the Musée Galliera and the museum of artistic collections which is shortly to occupy the Ville de Paris Pavilion at the Champ de Mars. It has been decided that the Musée Galliera will be essentially a museum of industrial art, and will contain among other things the fine collection of tapestries belonging to the City of Paris, which is valued at many millions of francs. The Pavilion "de la Ville" will be reserved for works of painting and sculpture, sketches and sculpture models, works purchased at the annual salons, &c., the whole being intended to be a representative collection of Parisian art in the nineteenth century.——A competition has been opened by the Archbishop of Toulouse for the reconstruction of the church of Ste. Germaine at Pibrac.——The Municipal Council of Lyons has decided that the monument to President Carnot should be erected on the place de la République.

MISCELLANEOUS.

ARCHITECTURAL ASSOCIATION. DISCUSSION SECTION.—The third meeting for the present session of the Discussion Section of the Association was held at 56, Great Marlborough-street, on the 12th inst., Mr. W. Henry White in the chair. A paper was read by Mr. Theo. Moore, A.R.I.B.A., entitled "How shall we show our Work to the World?" A discussion followed, in which Messrs. Satchell, S. B. Beale, Greenop, Hopkins, Stockdale, and Garbutt took part. The special Visitor, Mr. E. W. Mountford, F.R.I.B.A., having criticised the paper, the usual votes of thanks were passed, and the proceedings terminated.

MEMORIAL TO MR. OLIVER HEYWOOD, OF MANCHESTER.—A statue of Mr. Oliver Heywood, a Manchester merchant and philanthropist, was unveiled on the 11th inst. at Manchester, by the Bishop of Manchester. The statue is the work of Mr. A. Bruce-Joy. It consists of white Sicilian marble, and rests on a granite pedestal. The statue has been erected by public subscription, at a cost of about 2,600*l*. The effigy stands at the outhern end of the square, facing the Town-hall.

DOMESTIC WATER CISTERNS.—The need for regulations requiring the covering and cleansing of domestic water cisterns is amply demonstrated in the statements which Dr. Waldo, the Medical Officer of Health of the parish of St. George-the-Martyr, Southwark, has made in his annual report for 1893. He furnishes an abstract of a report which he presented after enquiry made into the conditions of the cisterns attached to the forty-one "model" dwellings scattered throughout the district. These cisterns, for the most part situated on the roof, were often imperfectly covered, and were in

most cases within a few feet of the openings of the soil-pipe ventilators. Not only was this danger in question, however, for in addition the state of the contents of these receptacles was frequently filthy, the water being covered with smuts, and in some instances decayed vegetable matter lay two inches thick along the bottom, or the sides of the cisterns were coated with slimy filth an inch thick. Apparently private dwellings were no better, and here too the cisterns were often placed over water-closets or near dust-bins in the front areas. It is pleasing to note, therefore, that the Vestry have adopted by-laws under the Public Health (London) Act, 1891, with regard to the covering and periodic cleansing of house cisterns; but, judging by what Dr. Waldo says, the enforcement of the by-laws so adopted will be no light matter, and will call for close supervision for some time to come.—*The Lancet.*

AN ARCHITECT'S CERTIFICATE BOOK.—Mr. Mowbray A. Green, A.R.I.B.A., has brought out a very useful book of forms for architects' certificates for payments to contractors. The pages are arranged with counterfoils, in the same manner as a cheque-book. Both on the certificate-form and on the counterfoil are blanks for recording the name of the client on whose account the payment is made, and the number of the certificate; the counterfoil and the certificate have also each the same page number. The certificate is drawn out so as to show the sums already certified for (if any), the amount certified for on that particular form, and the total paid up to date. The certificate-form includes a receipt-form to be detached and returned, containing the statement of the place at which the work was done, and a blank for filling in the number of the certificate, the receipt being given "in respect of certificate No. —" The whole will be a great assistance towards a clear record of payments, the whole information being retained by the architect on the counterfoils which remain in the book. Index-pages are provided. The title is "Architects' Certificate Forms: Arranged by an Architect;" and the book is printed and published by Mr. Ernest W. Savory, Cirencester.

SANITARY INSPECTORS' ASSOCIATION.—In connexion with the course of lectures and demonstrations arranged by the Sanitary Inspectors' Association for sanitary officers, Mr. E. Tidman, C.E., delivered the first of two lectures on "Modern House Drainage," at St. James's Hall, Piccadilly, on Saturday last. Mr. Thomas, of Bermondsey, the Chairman of the Association, presided. The lecturer first enumerated the main principles of modern house drainage as pretty generally agreed upon by those most conversant with the subject, and which are in common use throughout London and the country where modern drainage is applied. It was regrettable, he remarked, that the County Council had not embodied in some of the recent Sanitary Acts provisions for enforcing a uniform system throughout London with reference to drains and connexions below the surface. Great praise, however, must be given to the Council for securing uniform by-laws with regard to above-ground sanitary fittings, and with the exception possibly of the indefinite description of the quality, &c., of soil-pipes, except within houses, these new by-laws left little to be desired. If the model by-laws of the Local Government Board, slightly modified, were adopted in London, a step in the right direction would be taken without much expense or trouble to house-owners, and uniformity would be secured. In view of the lectures on "Details of Plumbers' Work," which are to be given in January by Mr. Fairchild, Mr. Tidman said he proposed to devote his attention particularly to underground and surface-work. He divided his subject into two main heads, namely (1), town-house drainage, and (2) country-house drainage, the first of these dealing with the work of drainage construction with the outfall into sewers, and the second with the outfall into cesspools and other forms of disposal, and with the treatment of sewage from country-houses. He proceeded to deal in considerable detail with the first of these divisions, referring, in turn, to sewers and sewer-connexions, interceptors, inspection chambers, gullies, grease-traps, and surface-inlets, ventilation and air-flush, syphonage, drains, drain-testing, drain-cleansing and flushing, combined drainage, dual system of drainage, and subsoil drainage. The lecture was of a very practical character, and contained many useful hints to those engaged in the work of house-drainage; it was illustrated by a number of diagrams and models. Mr. Tidman will deliver his second lecture on the 22nd inst.

A ROMAN VILLA AT DARENTH.—A discovery of some archæological importance, says the *South Eastern Gazette*, has been made within the last few days at Darenth, in Kent. Considerable remains of Roman tiles were noticed on the surface of a field beside the river to the south of the church, and tentative diggings were made, with the result that at about a foot below the surface remains of Roman foundations were met with. The space now enclosed as the present limits of the exploration is a square measuring 100 yds. on each side. There is still a good deal of clearing to be done in this area, but what is quite obvious at present is that we have the foundations of a quadrangular building, with its outer walls made of flint nodules set in mortar and faced with plaster, the walls measuring usually 2 or more in thickness. The inner walls are much less substantial, and seem, in some cases, as if they have been left hollow in the middle, while at the floor level each wall had a pronounced ornamental plaster moulding, concealing the angle formed by the floor and the wall. The floors of two of the rooms are paved with tesseræ. Of the other rooms one still has its flooring of square red tiles about 8 in. in diameter, and in others traces remain. Along the north front is a row of five chambers of various widths, but all of the same length north and south — viz., about 27 ft. The largest is nearly square, the next about 18 ft. in width, and the three others from 6 ft. to 9 ft. wide. Beyond these, on the east, is a tiny room about 6 ft. square, and it is probable that other foundations exist in this direction. On the western side of this range of rooms is a large hall, which runs southward to an extent that cannot yet be determined, with a width of about 17 ft. Abutting on the outer wall of this hall is a small chamber that is conjectured to be the bath, from the proximity of the hot-air passages, which are here extremely solid. A kind of causeway, formed of tiles laid flat in courses, runs due south, beginning at about 35 ft. from the back of the row of rooms on the north. At one side of the causeway is the base of a wall, and on the other a channel. Following this to the southward it was found to communicate with a semicircular chamber, about 6 ft. wide. Very few small antiquities have been found, some fragments of bronze armlets, chains, a so-called hipposandal, and small coin of Tetricus, &c., but broken pottery is found in abundance.

PLUMBERS' COMPANY.—At the annual banquet of the Plumbers' Company held at Goldsmiths' Hall on the 4th inst., Dr. Thorne Thorne, in proposing the toast of the "Public Health and the Plumber," based his remarks on the suggestion afforded by the device appearing on the menu card. He said:—"On the front page of this card there is a tree. It is growing without any visible beginning—any root; I suppose that that signifies that the origin of these ancient companies goes back so long past that it is impossible to trace it. Attached to the tree is a scroll on which are various words. The first is "Workmanship." I have been working in connexion with sanitation for many years, and I know that if there is one thing more than another that we feel confident about it is that the public health is closely identified with good workmanship, especially in plumbing. It is one of the first aims of this company that all plumbers should be men whose work shall be good. You don't want that men shall be mere mechanics. Here I notice that the next word on the scroll is "Education." You desire that workmanship should be based on real education. Then comes "Examination." Whatever disadvantagess may attach to examinations there is no other method by which the quality of the education can be tested. Next we have "Registration." I venture to say that the registration of plumbers throughout the country has already been conducive to a vast amount of good, and has tended to the improvement of the public health. And here, branching off at the top of the tree, is "Sanitation," and that is really the outcome of your work. To maintain the highest standard of public health it is really necessary that your Association should continue its good work." The names of Mr. Charles Hudson, Chairman of the Board of Examiners, and Mr. James Hoos, President of the United Operative Plumbers Association of Great Britain and Ireland, were coupled with the toast. Mr. Hudson, in his reply, emphasised the importance of apprenticeship in the plumbers' trade, and referred to the objects of the plumbers' classes held in various districts being to improve the knowledge of those who had daily experience in the trade, and further alluded to the examinations held by the Company, disclosing the fact that men are frequently applying for registration as journeymen who are found to be unable to do the most simple part of the plumbers' work, and those practising as masters to be absolutely ignorant of the most elementary principles of sanitation. Mr. Hoos, on behalf of the Operative Plumbers of the Kingdom, expressed the utmost sympathy with the objects of the Company, and the desire of the workmen to uphold the credit of the plumbers' craft.

THE SANITARY INSTITUTE.—At an examination for Inspectors of Nuisances, held by the Sanitary Institute in London on 7th and 8th insts., 112 candidates presented themselves. Questions were set to be answered in writing on the 7th, and the candidates were examined *vivâ voce* on the 8th. Sixty-eight candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of sanitary inspectors.

SEWERAGE SCHEME, PORTISHEAD. — The Portishead Local Board has received the Local Government Board's sanction to borrow 14,000*l.* to carry out the works in connexion with the proposed sewerage scheme; 12,000*l.* to be repaid within thirty years, and 2,000*l.* within fifteen years. The works include eight miles of sewers of various sizes, a sea outfall, 136 manholes, at an average depth of 11 ft. 6 in., about 100 iron ventilating-shafts, air compressing station with gas-engine, air compressors, cottage for attendant, ejectors, air-mains, &c. Estimates will shortly be invited for the carrying out of the works, as it is proposed to commence operations without delay. Mr. T. J. Moss-Flower, A.M.Inst.,C.E., Bristol, is the Engineer.

SEWERAGE WORKS, LEYTON.—A Local Government Board inquiry was held recently at the Town Hall, Leyton, by Colonel Henry Luard, R.E., in reference to the application of the Leyton Local Board for sanction to borrow 6,384*l.* for works of sewerage. The plans, sections, &c., of the proposed works having been explained by Mr. W. Dawson, A.M.Inst.C.E., the Board's Engineer and Surveyor, the Inspector proceeded to view the district proposed to be sewered. As a large part of the proposed sewers will of necessity be under flood level, special patent-jointed pipes have been provided for.

LEGAL.

DISPUTE AS TO ANCIENT LIGHTS AT SOUTHFIELDS.

THE case of Slack *v.* Richman and Smyth came before Mr. Justice Stirling in the Chancery Division, on Thursday and Friday, the 6th and 7th insts.

The plaintiff, Mr. J. T. Slack, who resides at Ashley Lodge, Wimbledon Park-road, Southfields, claimed an injunction to restrain the defendants from erecting, or carrying up, or permitting to be carried up, any wall or building on the land lying to the south-west of his premises, Ashley Lodge, in such a way as to obscure his ancient lights. There was also a claim for damages.

Mr. Graham Hastings, Q.C., and Mr. Peterson were counsel for the plaintiff; Mr. Grosvenor Woods, Q.C., and Mr. Boon represented Mr. W. J. Richman, who resides in the Wimbledon Park-road, and was the builder of the wall in question; whilst Mr. Kan appeared for Mr. H. W. Smyth, who resides at 2, Seymour-road, Southfields, and was the owner of the land on which the wall was being erected.

Mr. Hastings, in opening the plaintiff's case, said that Ashley Lodge had been built about forty years, and the plaintiff had enjoyed all that time an uninterrupted view over the land in question. On the ground-floor, up to 1873, looking southward, there were the dining and drawing-rooms, which looked on the ground. At a distance of 9 ft. 6 in. from the south-west wall of the plaintiff's premises was the boundary-wall which separated the plaintiff's premises from orchard land belonging to Mr. Smyth. That boundary-wall was only 4 ft. 6 in. in height. In 1873 and the early part of 1874 the plaintiff's father built a conservatory, which was completed by March 4th in that year, and it was the windows of that conservatory that were now obscured by the wall in question.

The plaintiff, in giving evidence, said that he used to be able to see, from the windows of the conservatory, Southfields station, which was nearly half-a-mile away. He first saw the land being measured out for building in June last, and complained to Mr. Smyth, whom he told that the conservatory had been built for over twenty years. He did not say to Mr. Smyth (who produced plans of the houses he intended to build) that if the houses were of a lower class he would not object. He saw the wall in question being erected in July last. As it now stood it did not interfere with his lights, but if it were erected any higher it would do so.

Mr. Grosvenor Woods: You have two old windows—the dining and drawing rooms—looking into the conservatory?—Yes.

And if no building were erected on this ground which would be above a line of 45 degrees, taken from the sill of those windows, do you suggest that the light of those rooms would be in any way obstructed?—I have not considered the point, and I do not know what 45 degrees would be.

By his Lordship: The conservatory was about 30 ft. long and 9 ft. broad.

Mr. Kan: Did you ever object to Mr. Smyth building upon this land before the writ in this action was issued?—I did object.

When? When I told him he would spoil my ancient lights.

Mr. Tanner, a barrister, gave evidence as to residing at Ashley Lodge from September, 1881, to September, 1890. There was certainly not much light in the potting-shed, but quite enough for the purposes of potting. There was no interruption of the light to the conservatory all the time he resided at Ashley Lodge.

Mr. Banister Fletcher, architect and surveyor, said that, in his opinion, the buildings when erected would intercept the light coming to the plaintiff's dining and drawing rooms.

For the defence, Mr. Bartlett, architect and surveyor to Mr. Smyth, said that if the building erected was not above a line of 45 degrees taken from the sill of the windows of the dining and drawing rooms, the light would not be obstructed. In his opinion the cherry and pear-trees had intercepted light to some extent. Mr. Richman had written to him telling him of the injunction applied for by the plaintiff, and he (witness) wrote back saying that Mr. Slack had no ground for complaint.

Henry Strong, builders' foreman, said he saw Mr. Smyth's land, before it was cleared for building, at the end of June. There were plum, pear, and cherry-trees close to the plaintiff's conservatory.

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Conservatory, Victoria Park	Handsworth Loc. Bd.	E. Kenworthy	Dec. 18
Mortuary, &c.	Medway Union	E. W. Betts	do.
Alterations, &c. to Sewage Farm, Irthlingborough Grange	Wellingborough L. B.	E. Sharman	do.
Schools, Balmoral-avenue	Malone Presbyterian Church Committee	Young & Mackenzie	do.
Road and Path, Craigan, Pentyrch	Llandaff Highway Bd.	Jas. Holden	do.
Station Work, Portland, Dorset	G. W. R. Co.	*Official*	do.
Dispensary, Glasnevin	North Dublin Union	do.	Dec. 19
Wall and Gates, Blue Boar-lane	Rochester Corp.	Wm. Banks	do.
Sewers, Harborough Hills Estate	Barnsley Town Council	J. H. Taylor	do.
Additions to Schools	Boscastle (Cornwall) U.D. School Board	O. B. Peter	do.
Water Main, Brighstone	Isle of Wight R.S.A.	T. R. Saunders	do.
Masonic Hall, Clones, Ireland	J. M. Calvert	.....	Dec. 20
Stables, Lower King's-road, Berkhamsted	A. C. Meek	T. F. Shaw	do.
Surveyors' Materials	Leicester Corporation	E. G. Mawbey	do.
Road Improvement Works, Norton-road, &c.	Reading Sanitary Auth.	Jno. Bowen	do.
Police Station and Court Room, Rochdale	Lancashire C. C.	Littler & Son	do.
Waterworks (1,300 yds.), Brereton, near Rugeley	Lichfield R.S.A.	W. E. Rogers	do.
*Works at Harringworth and Derby	Midland Railway Co.	*Official*	do.
House and Shelter, Gorton Open Space	Manchester Corp.	do.	do
Congregational Schools, Tong Moor, Bolton	.....	W. H. Dinsley	Dec. 21
Rebuilding St. Michael's Schools, Bristol	.....	W. V. Gough	do.
Street Works (200 yds.), Little Bowden, Market Harborough	J. W. Newcombe	H. G. Coales	do.
*Making-up and Sewering Roads	Heston and Isleworth Local Board	J. H. Streachan	Dec. 22
Pair of Cottages, &c. Probus, Cornwall	Geo. Gow	.....	do.
Additions to Constables' House, Beverley, Yorks.	Standing Joint Com.	A. Beaumont	do.
Rowley Ragstone	West Bromwich Union	*Official*	do.
Work at the Guildhall, High-street	Walsall Corporation	do.	do.
Alterations, &c. to Gasworks, Wolverhampton-street	do.	do.	Dec. 24
*Patent Glazing	Manchester Corp.	do.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Arcade, Llanelly	.....	W. Griffiths	Dec. 24
*Road-Making, Drains, and other Works	Poplar's Estate, Leyton	W. C. Poole	do.
Sewer, &c. Ardrossan, N.B.	Police Commissioners	Leslie & Reid	Dec. 26
Wesleyan Chapel, Percy-street, Swindon	Trustees	T. S. Lansdown	Dec. 27
*Making-up Roads	Walthamstow Loc. Bd.	G. W. Holmes	Dec. 28
Water Main, Nant-y-wydd (Contract No. 4)	Swansea Town Coun.	*Official*	Dec. 29
Pipes, Tanks, &c. Pembridge, Herefordshire	Kington District Coun.	M. Bamford	Jan. 1'95
Church Restoration, Ballybay, Ireland	Second Presbyterian Church	.....	do.
*Menston Sewerage	Wharfedale U.R.S.A.	J. Waugh	Jan. 3
Additions to Asylum, Maryborough	Commrs. of Control Lunatic Asylums (Ireland)	*Official*	Jan. 5
*Works and Materials	Vestry of St. George's, Hanover-square	G. Livingstone	Jan. 12
*Waterworks	Skibbereen Union, co. Cork	R. W. Walsh	do.
Five Houses, Pontefract-lane, Leeds	.....	Swale & Mitchell	No date

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Surveyor	Paignton Local Board	175*l.* &c.	Dec. 29
*Clerk of Works	Staffordshire C. C.	4*l.* 4*s.*	Dec. 31
*Architect for Lunatic Asylum	London County Council (Asylums Committee)	10,000*l.*	Jan. 1'95
*Literary and Art Director	Preston Corporation Library Committee)	.....	Jan. 16

Those marked with an asterisk (*) are advertised in this Number. ***Contracts, pp.*** lv., vi., *and* viii. ***Public Appointments, p.*** xix. *and* xxi.

The cherry-tree was the tallest, and was about 4 ft. or 5 ft. above the eaves of the conservatory, and some of its branches touched the glass of the conservatory.

Mr. W. J. Richman, one of the defendants, said that he did not think that there was any light at all in the conservatory that could be interfered with, as the glass was roller-glass, and the plaintiff by using that glass had destroyed, to a certain extent, his own light. The windows of the potting-shed had been covered for years by creepers and overhanging trees.

Mr. Smyth, the other defendant, gave evidence as to having an interview with Mr. Slack before the building agreement was entered into, and showing him some of the plans. The plaintiff did not then, nor subsequently, object to the plans. The first he knew of the plaintiff's objection was when the writ was served upon him.

His Lordship, after hearing further evidence and the addresses of counsel, in the course of a long judgment, said that it was clear that the plaintiff had a legal title to the ancient lights, and in his opinion, the buildings proposed to be erected would be a substantial interference with his dining and drawing room windows, and also with the conservatory. He did not think that the trees had caused any permanent obstruction. The injunction would be granted against both the defendants with costs.

MEETINGS.

FRIDAY, DECEMBER 14.

Institution of Civil Engineers (Students' Meeting).—Mr. S. Henry Barraclough, B.E., and Mr. Lionel S. Marks, B.Sc., on "Some Experiments on the Heat-losses to the Cylinder Walls of a Steam-Engine." 8 p.m.

SATURDAY, DECEMBER 15.

Institution of Junior Engineers.—Visits to the Hampton Station of the following Waterworks: 3 p.m., Southwark and Vauxhall. 3.30 p.m., Grand Junction. 4.30 p.m., West Middlesex. By permission of the respective Engineers, Messrs. J. W. Restler, A. Fraser, and M. W. Hervey, M.M.Inst.C.E.

Queen's College, Cork.—Mr. Arthur Hill on "The History of Architecture." IV. 3 p.m.

SUNDAY, DECEMBER 16.

South-place Institute.—Mr. W. Williams on "Stonemasons: their Unionism." 4 p.m.

Sunday Lecture Society.—Mr. Wyke Bayliss on "The Use of the Supernatural in Art." 4 p.m.

MONDAY, DECEMBER 17.

Royal Institute of British Architects.—Professor Banister Fletcher on "The London Building Act, 1894." 8 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "Modern Developments in Explosives." IV. 8 p.m.

Glasgow Philosophical Society.—Mr. Alex. N. Paterson on "Some Principles of Decoration." 8 p.m.

TUESDAY, DECEMBER 18.

Glasgow Architectural Association.—Mr. T. L. Watson on "The Thirteenth and Fourteenth Centuries in Italy." 8 p.m.

Institution of Civil Engineers.—Discussion on Mr. E. B. Wain's paper on "Colliery Surface-Works." 8 p.m.

WEDNESDAY, DECEMBER 19.

Society of Arts.—General J. Michael, C.S.I., on "Forestry." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Annual Meeting of the Directors. 8 p.m.

Liverpool Engineering Society.—Professor Oliver J. Lodge on "The Second Law of Thermo-dynamics." 8 p.m.

Carlisle Architectural, Engineering, and Surveying Association.—Mr. C. W. Hill on "The Influence of Soil on Health." 8 p.m.

SATURDAY, DECEMBER 22.

Queen's College, Cork.—Mr. Arthur Hill on the "History of Architecture." V. 3 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

21,508.—BRICK AND TILE KILN: *W. Stevenson.*—An opening is made in each chamber, the centre of which is half-way up the kilns inside, or between this and the top, with valve or damper above the opening; and a branch with damper at each space from the flue. These flues and dampers are arranged so as to control the air, and assist in equalising the heat.

24,041.—SMOKE-TRAP: *C. Welch.*—The trap which is the subject of this patent is of metal, with four sides, each with a clapper fitted so that two sides are by the action of the wind always closed, the opposite sides being open at the same time to allow the smoke to escape.

693.—WINDOWS: *A. Pickard.*—A method of connecting the cord or wire to the sashes in such a manner that they may be readily shortened or lengthened. Fasteners are fitted which will allow each sash to be opened, closed, or locked separately. Specially useful in bay windows.

700.—DECORATING CEILINGS AND WALLS: *H. Smith.*—Pieces of ordinary, or stamped, or coloured glass, are fixed in combination with cement for covering walls, so as to give a smooth surface for ornament, and one specially useful for sanitary purposes.

786.—TOOLS FOR STONE-DRESSING: *W. Stephenson.*—The tool is provided with an adjustable cutter of steel, which obviates grinding, as the friction on the stone tends to renew the edge, and allows greater results than the tools at present in use.

8,997.—SASH-STOP: *F. Hitchmough.*—This sash-stop has a tongue to open and shut, and a spring to hold the tongue in a horizontal position when closed. Specially designed to prevent the sashes being forced by burglars.

12,613.—KILNS, &c.: *H. T. Sully.*—A cast-iron appliance is introduced into the kiln to assist in the delivery of the fuel and equalising the heat. It may be withdrawn from the kiln at will.

12,995.—LADDERS: *P. Schmarl.*—In portable or travelling ladders a special construction to enable them to be quickly raised by means of adjusting the balance of the adder on the axle of the wheeled carriage.

NEW APPLICATIONS FOR LETTERS PATENT.

NOVEMBER 26.—22,861, J. Crowe and D. Cording, Hanging Window-sashes.—22,879, G. and J. Rushworth, Stone-sawing Machinery.—22,885, J. Kickhefel, Fire-doors.—22,888, J. Wharfe, Locking Device for use with sliding-bolts for doors, &c.—22,898, G. Richardson, Mortice Locks for doors, &c.—22,908, E. Chatelain, Water-closets.—22,916, A. Clare, Mounting Grindstones. 22,925, B. Ikin, Fireproof and other walls and partitions.

NOVEMBER 27.—22,954, G. Hardie, Cleaning Drain-traps, &c.—22,963, E. Read, Protecting the Joints of Windows.—22,982, E. Fawcett, Choked Drain Indicator.—23,016, A. Gribbohm, Construction of Factory Chimneys, Lime and Cement Kilns or Furnaces, and other structures.—23,026, W. Shelley, Window-fastener.

NOVEMBER 28.—23,050, C. Pegrain, Metal Sheets for the construction of Fireproof Buildings.—23,063, E. Hallam, Firegrates, Stoves, &c.—23,075, R. Stafford, Flushing Water-closets, &c.—23,107, W. & J. Elliott, Firegrates or Stoves.—23,110, F. Commin, Window-sashes. 23,116, E. Pearson, Chimney-cowl.—23,126, F. Constable and F. Naldrett, Window-catch Fastener.

NOVEMBER 29.—23,151, W. Taylor, Window-sashes.—23,180, R. Barker, Balance and Lock for Window-sashes.—23,202, P. Willis, Self-opening Doors.

NOVEMBER 30.—23,207, J. Dennis, Scaffold-fastener.—23,211, W. Cruickshanks, Windows and Window-sashes.—23,213, F. Smith and others, Earthenware Ventilators.—23,232, A. Classey, Clamps.—23,243, W. Thompson, Workmen's Time-recorders.—23,276, C. Sears, Fasteners for Window-sashes, Casements, &c.—23,286, C. Smith & M. Vedder, Mitre-block.

DECEMBER 1.—23,382, J. & W. Starley, Tread-surfaces, applicable to steps, stairs, gangways, &c.

PROVISIONAL SPECIFICATIONS ACCEPTED.

18,043, W. Davies, Raising, Lowering, and Fixing Window-sashes.—20,407, R. Gloyne, Permanent Seal Gully.—20,505, H. Butler, Construction of Fireproof Dwellings.—21,308, T. Marshall, Window-sashes.—21,525, T. Lewis, Paving and Flooring Block.—21,692, R. Allen, Crest Tiles.—21,937, J. Barber, Ventilating Drains and Sewers.—21,941, H. Shepherd, Hollow Walls.—21,970, F. Thackeray, Gully Dish and Grate.—22,073, G. Marsden, Tiles.—22,073, W. Nicol, Ventilators.—22,118, S. Dean, Tiles.—22,234, J. Merryweather, Fireproof Curtains for Theatres.—22,427, W. Youlten, Water Bars for Casements.—22,507, J. Williams, Casements.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

1,882, W. Morison, Chimney and Ventilating-shaft Tops.—3,434, A. Brown and H. Pruce, Connecting Door and like Knobs to their Spindles.—20,360, J. Maskelyne, Check or Coin-freed Locks or Bolts for Doors.—20,574, W. Heys, Vulcanisation of Timber.—20,650, L. Küpper, Gypseous Walls.—20,662, J. Schmitz and C. Bürker, Ceilings.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

DECEMBER 3.—By *Towers, Ellis, & Co.*: 1, Westbourne-pk-rd., Bayswater, u.t. 55 yrs., g.r. 9*l.*, 400*l.*—By *Dent & Dallas*: 82, Euston-st., Euston-sq., u.t. 24 yrs., g.r. 1*l.*, 210*l.*; 17, Cobourg-st., u.t. 24 yrs., g.r. 1*l.*, r. 30*l.*, 285*l.*

DECEMBER 4.—By *Debenham, Tewson, & Co.*: 42, Colebrook-row, Islington, f., 800*l.*—By *H. J. Perry*: 31, Balcombe-st., Marylebone, u.t. 26 yrs., g.r. 10*l.*, 480*l.*; 100, Goldhawk-rd., Shepherd's Bush, u.t. 58 yrs., g.r. 6*l.*, r. 50*l.*, 450*l.*; 95, Sterndale-rd., Kensington, u.t. 88 yrs., g.r. 7*l.*, 450*l.*—By *Furber, Price, & Furber*: 19, Godolphin-rd., Shepherd's Bush, u.t. 59 yrs., g.r. 7*l.*, 255*l.*; 69, Stibbington-st., Somer's Town, u.t. 50 yrs., g.r. 9*l.*, 280*l.*; 189, 191, and 193, Clarendon-rd., Notting-hill, 3 to 15 odd, Dulford-st.; 161 and 163, Walmer-rd., u.t. 56 and 64 yrs., g.r. 45*l.*, r. 457*l.*, 1,725*l.*—By *F. Long & Co.*: 40, Avenell-rd., Highbury, u.t. 84 yrs., g.r. 7*l.* 7*s.*, 395*l.*

DECEMBER 5.—By *Fredk. Varley*: 110, Hornsey-rd., Holloway, u.t. 48 yrs., g.r. 6*l.*, r. 40*l.*, 275*l.*; 24, Vennerrd., Sydenham, u.t. 84 yrs., g.r. 10*l.*, 300*l.*—By *Macer & Fitzwilliam*: 76, Cecil Pk., Crouch Hill, u.t. 88¾ yrs., g.r. 9*l.*, 650*l.*; freehold building site, High-rd., Willesden, 200*l.*; 47, Upper Thames-st., City of London, u.t. 8 yrs., g.r. 35*l.*, r. 200*l.*, 700*l.*—By *H. E. Trafford*: No. 364, Commercial-rd. East, f., r. 40*l.*, 525*l.*; 87 and 89, Exmouth-st., Mile End, u.t. 19 yrs., g.r. 7*l.* 10*s.*, 305*l.*; 91 and 93, Exmouth-st., u.t. 18¾ yrs., g.r. 7*l.* 10*s.*, r. 67*l.* 16*s.*, 315*l.*; 39, St. Peter's-rd., u.t. 36 yrs., g.r. 3*l.* 8*s.*, 405*l.*

DECEMBER 6.—By *Savage Son*: 40a and 42a, Swaton-rd., Bow, u.t. 68 yrs., g.r. 17*l.*, 450*l.*; 64 and 66, Swaton-rd., u.t. 68 yrs., g.r. 7*l.*, 300*l.*; 68 and 70, Swaton-rd., u.t. 68 yrs., g.r. 7*l.*, r. 52*l.*, 260*l.*; 70a, Swaton-rd., u.t. 68 yrs., g.r. nil, r. 27*l.* 6*s.*, 225*l.*; 60, Lichfield-rd., Mile End, u.t. 48 yrs., g.r. 3*l.* 10*s.*, r. 28*l.*, 280*l.*—By *G. Simmins & Ellis*: F.g.r. of 3*l.*, Hayward's Heath, Sussex, reversion in 55 yrs., 195*l.*—By *Foster & Cranfield*: Absolute reversion to one-twenty-fourth part of various f., c., and l. properties, estimated rental 13,713*l.* per ann., 2,900*l.*; perpetual rent charge of 75*l.*, Toot Baldon, Oxford, 1,350.

DECEMBER 7.—By *R. W. Scobell*: "Langdon House," Dawlish, Devon, and 56 acres, f., 4,600*l.*—By *W. W. Read & Co.*: 51, Mina-rd., Old Kent-rd., u.t. 27 yrs., g.r. 4*l.*, 140*l.*—By *W. B. Hallett*: 85, 87, and 89, Walcot-sq., Lambeth, u.t. 12 yrs., g.r. 10*l.*, 203*l.*; 19, Cloudesley-sq., Islington, u.t. 6½ yrs., g.r. 8*l.*, r. 42*l.*, 55*l.*; 43, 45, and

47, Brooksby-st., u.t. 14¼ yrs., g.r. 17*l.*, r. 108*l.*, 390*l.*; two plots of f. &c., land, Archway-rd., Highgate, 370*l.*; four plots of f. land, Gresley-rd., Hornsey-lane, f., 565*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a, for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I. ..load	10/0/0	16/0/0
Sequoia, U.S.ft.cu	1/10	2/2
Ash, Canada load	3/0/0	4/5/0
Birch, do.	3/0/0	4 5'0
Elm, do.	3/15/0	5 0/0
Fir, Dantsic, &c.	1/10/0	3/0/0
Oak, do.	2/15/0	4/15/0
Canada	5/5/0	6/15/0
Pine, Canada red	2/15/0	3/5/0
Do. Yellow	3/10/0	5/15/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	5/0/0	6/10/0
Wainscot, Riga, &c., log	2/15/0	5/0/0
Odessa, crown....	2/15/0	5/0/0
Deals, Finland 2nd & 1st std 100	7/0/0	9/0/0
Do. 4th & 3rd..	7/0/0	8/0/0
Do. Riga	7/0/0	8/10/0
St. Petersburg, 1st yellow	9/10/0	12/0/0
Do. 2nd yellow	7/10/0	9/0/0
Do. white	8/0/0	10/10/0
Swedish	7/0/0	15/10/0
White Sea	6/10/0	14/0/0
Canada, Pine 1st	21/0/0	24/10/0
Do. do. 2nd....	16/0/0	17, 12/0
Do. do. 3rd, &c.	7/10/0	10/10/0
Do. Spruce, 1st	8/10/0	10/0/0
Do. do. 3rd & 2nd	6/10/0	7/10/0
New Brunswick	6/0/0	7/0/0
Battens, all kinds	5'0/0	21/0/0
Flooring boards, sq., 1 in. prep. 1st	0/9/6	0/14/6
Do. 2nd	0/7/0	0/11/6
Other qualities—	0/5/0	0'7/0
Cedar, Cuba.. ft.	/3	/4
Honduras, &c.	/3	/4½
Mahogany, Cuba	/3	/6
St. Domingo, cargo av.	/3	2/6
Mexican do. do.	/3	/4
Tobasco do. do.	/3	/6
Honduras do. ..	/3½	/5½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio	7/0/0	18/0/0
Bahia	6/0/0	27/0/0
Satin, St. Domingo	0/0/5	0/1/0

TIMBER (*continued*).		
Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian ..	0/0/3½	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2/2/5½	0/0/0
Bar, Welsh, in London	5/12/6	5/15/0
Do. do. at works in Wales	5/2/6	5/5/0
Do. Staffordshire, in London	6/0/0	6/10/0
COPPER—British cake and ingot	43'0/0	43/5/0
Best selected ..	43/10/0	44'0/0
Sheets, strong ..	50/10/0	0/0/0
Chili. bars	40/18/0	41'3/0
YELLOW METAL lb	0/0/4½	0/0/4½
LEAD—Pig, Spanish.....ton	9/11/3	0/0/0
English com. brands	9/13'9	9/15'0
Sheet, English, 6 lbs. per sq. ft. and upwards	10/15/0	11/0/0
Pipe	11/15/0	0/0/0
ZINC—English sheet.....ton	18/10/0	19/0/0
Vieille Montagne	19/10/0	0/0/0
TIN—Straits	63/10/0	64/0/0
Australian	63'15/0	64/5/0
English Ingots..	65/0/0	65/10/0
Banca	64/0/0	64/10/0
Billiton	63/0/0	63/10/0
OILS.		
Linseed .....ton	19/17/6	20/5/0
Cocoanut, Cochin	26/10/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos	25 12/0	0/0/0
Rapeseed, English pale	20/15/0	21'0/0
Do. brown	19/5/0	19'10/0
Cottonseed ref....	17/15'0	18/10/0
Oleine	21/10/0	24/0/0
Lubricating, U.S.	4/0/0	5/0/0
Do. refined	5/0/0	12/0/0
TAR—Stockholm barrel	1'1/0	0 0'0
Archangel	0 13'0	0 0 0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursday.*]

BEACON (Camborne).—For erection of Wesleyan Sunday School and class-rooms. Mr. Sampson Hill, architect, Redruth :—

The whole.

White & Thomas	£605 0
Barbary & Lobb	603 5
Dunn & Mitchell	572 10
J. Berryman	569 0
James Pengilly, Tuckingmill*	536 19
W. H. Ireland, Gwinear*	

Masonry only.

W. P. Harrington ..... £420 | W. Richards £326

Carpentry only.

W. H. Moyle ..... £250 | Jno. Roberts £232

* Accepted.

BECKENHAM.—For the supply and laying 2,000 yards of granite channelling, Beckenham- and Southend-roads, for the Local Board. Mr. J. A. Angell, C.E., Surveyor, Beckenham :—

W. H. Wheeler	£886 14 3	Fry Bros.	£708 5 0
S. Hudson	750 12 7	Mowlem & Co., West-	
T. Adams	719 16 8	minster (accepted)	652 0 0

[Surveyor's estimate, £725.]

BELFAST.—Accepted for the extension of St. George's Market, also erection of fish market, for the Market Committee. Mr. J. C. Bretland, City Surveyor, Belfast. Quantities by Mr. W. H. Stephens, Donegal-place, Belfast :—

Fish Market.

H. & J. Martin, Ltd., Ormeau-road, Belfast £4,215

Covered St. George's Market, 3rd Section.

H. & J. Martin, Ltd., Ormeau-road, Belfast £6,891

BOSTON (Lincolnshire).—For the erection of a house on the Spilsby-road, Boston, for Mr. J. Hale. Mr. Jas. Rowell, architect, Boston :—

Bricklayer's, Mason's, Slater's, Plasterer's, Carpenter's, Joiner's, and Ironmonger's work.

C. Jessop	£570	Hill & Sons (carpenters)	*£517
J. Lucas	560	Pinder & Son (bricklayers)	
H. Hinds	535		
H. W. Parker	520		

* Accepted.

Painter's, Plumber's, Glazier's, and Bellhanger's work.

A. E. Griffin	£65 15	B. F. Parker*	£54 12
V. J. Kime	55 0		

* Accepted.

BRENTFORD.—For the construction of 184 yds. of 3 ft. diameter brick culvert, for the Local Board. Mr. Nowell Parr, C.E., Clifden House, Boston-road, Brentford :—

S. Hudson	£547 12 0	Wilkinson, Bros.	£449 0 0
H. Harris	515 0 0	Pickthall & Co.	403 0 0
W. Lee	452 1 0	G. Pearce, Brentford*	398 18 3

[Surveyor's estimate, £400.]

* Accepted.

BRISTOL.—For the erection of caretaker's house, Ashton Gate school, for the Bristol School Board. Mr. F. Bligh Bond, architect, 36, Corn-street, Bristol. Quantities by the architect :—

Bale & Westlake	£415	Easter, Brook & Sons	£357
J. Love	408	Hatherley & Carr	347
W. Church	397	G. H. Wilkins	340
J. Reed	373	Wilkins & Gosling	323
G. Humphries	365	C. A. Hayes	295
J. Perrott	364	J. Browning*	280
E. Walters	360		

* Accepted.

EAST MOLESEY.—For the supply of machinery in connexion with the East Molesey Drainage. Contract No. 2. Mr. J. C. Melliss engineer, 264, Gresham House, E.C.

	A. Boilers.	B.—Air Compres'g Plant.	C. Air Main.	D. Ejectors.	E. Pumps.	F. Engines.	G. Sludge Plant.	H. Miscellaneous.	Total.
	£ s.	£	£ s. d.	£	£	£	£	£	£
H. & T. Danks, Ltd.	400 0	..	..	..	..	..	..	..	..
Gimson & Co.	352 0	534	545 0 0	942	1,590	430	517	247	5,157
Lamberton & Co.	..	..	..	..	850	395	..	..	..
John Thompson	320 0 / 380 0	..	..	..	..	..	..	..	..
G. Scott & Son.	..	350	..	..	..	..	..	..	..
D. Stewart & Co., Ltd.	360 0	335	..	..	820	352	463	461	..
S. Owens & Co.	..	..	..	..	1,075	..	..	..	4,950
Marshall, Sons & Co., Ltd.	..	..	..	..	..	287	..	..	..
Markham & Co., Ld., Chesterfield*	470 0	375	350 0 0	915	725	305	450	395	3,985
Coalbrookdale Co., Ltd.	..	..	..	..	..	280	..	..	..
Galloway's, Ltd.	485 0	..	..	..	..	..	..	..	..
Humpidge, Holborrow, & Co.	..	..	..	..	..	265	..	..	..
J. Foster & Sons	..	..	..	..	..	490	..	..	..
Tyler (Hayward) & Co.	480 0	522	530 0 0	990	835	352	480	220	4,339
R. Warner & Co.	..	..	..	..	712	366	..	218	..
Union Foundry Co.	365 0	500	525 0 0	900	815	366	498	370	4,319
Hughes & Lancaster †	..	..	1,924 11 6	..	..	..	..	..	..
Leeds & Bradford Boiler Co.	329 0	..	..	..	..	..	..	..	..
J. F. Clarke & Sons	228 10	..	..	..	..	304	..	290	..
B. Cooke & Co.	..	..	..	..	..	..	..	..	..
S. H. Johnson & Co.	..	393	..	..	..	..	468	..	..

* Accepted. † For Parts B., C., and D.

ENFIELD.—For private street works for the Enfield Local Board of Health :—

—	Almaroad.	Groveroad.	Halifaxroad.	Byculiah-road.			Chase Green-av.		Rowantree-rd.		Byculiah-avenue.	Culloden-road.
				Sect. 1.	Sect. 2.	Sect. 3.	Sect. 1.	Sect. 2.	Sect. 1.	Sect. 2.		
	£ s. d.	£	£	£	£	£	£ s.	£ s.	£	£	£	£
Bell	330 0 0	280	984	1,189	754	383	169 0	363 0	691	529	575	602
Betts	318 0 0	294	—	—	—	—	—	—	—	—	—	—
Blomfield	348 0 0	395	829	—	—	—	—	—	—	—	—	—
Fry Bros.	328 0 0	290	789	984	662	324	140 0	295 0	537	517	461	514
Griffith's, Kingsland-road	*313 0 0	212*	628*	947	654	322	109 0*	296 0*	5.6*	388*	455*	508
Jackson	—	—	743	1,053	722	356	—	—	—	—	—	—
Lugdon & Crawford	329 0 0	291	765	943*	663*	325*	139 0	299 0	515	455	463	455*
Lee & Son	336 6 6	302	776	1,218	886	369	159 0	329 0	633	586	574	685
Nicholls	335 0 0	297	770	—	—	—	—	—	—	—	—	—
Sayer	—	—	911	—	—	—	—	—	—	—	—	—
Somerfeld	458 0 0	447	1,014	—	—	—	164 0	417 0	—	481	529	699
Wadey & Co.	373 0 0	413	793	999	775	349	179 0	363 0	621	505	588	587
Road Surveyor's estimate	340 0 0	317	810	1,150	804	340	156 5	343 15	600	392	525	506

* Accepted.

BUCKINGHAM.—For the erection of school buildings, &c., for the Thornborough School Board. Mr. F. A. Parkes, architect, Buckingham :—

Orchard & Son	£407 0	Burberry	£410 0
Wade	489 0	W. Franklin	410 0
W. Tompkins	473 0	Tombs & Sons, Buckingham (accepted)	347 10
J. K. Tibletts	435 0		

CARDIFF.—For additions, &c., to No. 28, The Parade, and converting same into school buildings, for the Governors of the Welsh Intermediate Education Act, Cardiff scheme. Mr. Geo. Thomas, architect, Queen's-chambers, Cardiff. Quantities by the architect :—

Frank Ashley	£1,170 5 10	Jones Bros.	£890 0 0
Hatherley & Carr*	1,058 0 0	H. Lewis & Son	853 11 7
Dd. Davies	1,015 0 0	Cadwallader & Hockridge	850 0 0
S. Shepton & Son	1,030 0 0	Fred G. Robins	830 0 0
C. C. Dunn	1,000 0 0	Hy. Davies, Cardiff †	819 17 0
Ben Evans	994 0 0		
Knox & Wells	952 0 0		

* Informal. † Accepted.

CARDIFF.—For the erection of a church, St. Andrew's Parish, for Rev. G. W. Hanford, and Building Committee. Mr. Geo. E. Halliday, architect, Cardiff. Quantities by Mr. John W. Rodger, 14, High-street, Cardiff :—

Hatherley & Carr	£8,769 0 0	Evans, Bros.	£6,962 9 10
Knox & Wells	8,654 0 0	S. Shepton & Sons, Cardiff*	6,936 17 3
David Davies	8,560 0 0	Fryatt, Richards, & Co.	6,811 13 4
Rees & Thomas	8,080 4 6	J. Haines	6,498 0 8
Latty & Co.	7,500 0 0		
Cadwallader & Hockridge	7,220 0 0		

* Accepted.

CARDIFF.—For the construction of steps and footway approach, Adamsdown-square and Windsor-road, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff :—

T. Wood & Son	£177 15 3	E. A. Page	£141 1 3
W. Thomas	159 10 6	T. Ashley	139 10 2
Benjamin Evans	156 17 6	H. Lewis (accepted)	138 17 6
Knox & Wells	148 3 4		

[All of Cardiff].

COMPTON GIFFORD (Devon). — For repairing, levelling, paving, and channelling Pentillie-road, Trematon-place, &c., for the Local Board. Mr. K. H. Worth, Surveyor, 42, George-street, Plymouth :—

Pentillie-road.

J. Shaddock	£420 1 6	Wakeham Bros., Plymouth*	£315 9 3
W. C. Shaddock	358 10 2½	C. L. Duke †	278 6 1
Paynter & Davy	352 16 3		
E. Duke	332 13 4		

Ford Park-lane, North.

J. Shaddock	£299 11 10	E. Duke	£239 7 10
W. C. Shaddock	249 10 3	Wakeham Bros.	219 7 2
Paynter & Davy	243 5 5	C. L. Duke*	207 4 5

Seaton-lane, North and South.

J. Shaddock	£258 14 4	E. Duke	£215 5 1
W. C. Shaddock	246 12 10	Wakeham Bros.	199 12 1
Paynter & Davy	228 1 0	C. L. Duke*	197 8 6

Station-road and Seaton-road-lane.

J. Shaddock	£282 18 8	E. Duke	£239 1 2
W. C. Shaddock	278 4 6	Wakeham Bros.	222 4 7
Paynter & Davy	242 15 3	C. L. Duke*	215 12 10

Trematon-place and Seaton-road-lane.

J. Shaddock	£231 2 10	E. Duke	£196 10 10
W. C. Shaddock	227 1 0	Wakeham Bros.	182 6 11
Paynter & Davy	202 17 11	C. L. Duke*	178 0 5

Trematon-place.

J. Shaddock	£213 7 9	E. Duke	£173 13 0
W. C. Shaddock	180 6 2	Wakeham Bros.	162 12 6
Paynter & Davy	177 9 4	C. L. Duke*	152 18 6

* Accepted. † Withdrawn.

DEAL.—For the supply of flints for the Corporation. Mr. F. C. Golder, Borough Surveyor, Deal :—

	Per 1,000 cubic yds. s. d.	
A. L. Knight & Co., Ltd., Sittingbourne	10 3	Field flints.
S. A. C. Lacken, Millbank Hoath, Canterbury	6 10	Pit flints.
Thos. Ashenden, 29, High-street, Canterbury	6 4	,,
W. Clark, Ospringe, near Faversham	6 2	,,
W. M. Chapman, Newham, Sittingbourne*	5 10	,,

* Accepted

DONCASTER.—For the erection of school, Carr-lane, for 712 scholars, for the Corporation of Doncaster. Mr. W. H. R. Crabtree, Borough Surveyor, 3, Priory-place, Doncaster. Quantities by the Borough Surveyor :—

Contract No. 1.—Buildings.

Mullins & Richardson, Shotton-st., Doncaster £4,120 15 5

Contract No. 2.—Heating.

Farr & Sons, Baxter-gate, Doncaster £203 10 0

Contract No. 3.—Dual Desk Furniture, &c.

Bennett Furnishing Co., Glasgow £309 14 0

ERDINGTON (Warwickshire).—For sewerage extension works at Erdington, for the Aston Rural Sanitary Authority. Mr. J. E. Willcox, C.E., Union-chambers, Birmingham :—

Jones & Fitzmaurice	£1,588 0 0	G. Law	£1,090 0 0
S. Wood	1,290 0 0	Cruwys & Hobrough	1,057 15 2
J. White	1,270 14 0	Holme	1,031 9 6
J. Biggs	1,237 0 0	H. Holloway, Wolverhampton*	960 0 0
G. Trentham	1,148 0 0		
Currall & Lewis	1,139 7 9		

* Accepted.

[Engineer's estimate, £1,109.]

FOLKESTONE.—For alterations, &c., to school-buildings, Black Bull-road, for the School Board. Mr. Joseph Gardner, architect, 2, Cheriton-place, Folkestone :—

R. Grayling	£294	H. R. Mercer	£149
W. White	160	Petts & Son	125
W. H. Holdom	155	R. Webster, Folkestone*	113

* Accepted.

HASTINGS.—Accepted for the supply of 2,000 tons of Guernsey granite spalls, for the Corporation. Mr. P. H. Palmer, C.E., Town Hall, Hastings :—

Vidler & Sons, Rye ..... £0 11 10 per ton.

KETTERING.—For the completion of the market house as a public library and offices, Rothwell, for the Local Board. Messrs. Gotch & Saunders, architects, Kettering :—

J. H. Vickers	£1,085	Alfd. Barlow	£865
C. & F. Henson	945	G. V. Henson	799
Geo. Henson	890	J. C. Neal, Kettering*	753

* Accepted.

KINGSTON-ON-THAMES.—For the execution of building work, &c., at the cemetery, for the Burial Board. Mr. Edwd. Carter, surveyor, 55, Clarence-street, Kingston-on-Thames. Quantities by the surveyor :—

W. H. Gaze	£1,698	C. E. Skinner	£1,444
G. F. Havell	1,680	W. Cunliffe, Kingston (accepted)	1,430
Dolling & Co.	1,653	W. Adamson	1,319
C. Claridge & Sons	1,651	J. Piller & Sons*	1,221
J. H. Jarvis	1,597		

* Withdrawn.

LIMPSFIELD (Surrey).—For the erection of a Home, at Limpsfield, Surrey, for the Trustees of the Caxton Convalescent Home. Mr. A. Saxon Snell, architect. Quantities by the architect :—

E. P. Bulled & Co.	£3,250	Holloway, Bros.	£3,147
John Mills	3,240	H. Wall & Co., Kentish Town (accepted)	3,09
Atherton & Latta	3,200		

LONDON.—For the supply and delivery of 6,000 ft. of tooled York paving, for the Greenwich Board of Works. Mr. James R. Heward, Surveyor :—

	Per 100 ft. superficial. 3-in.	2½-in.
Samuel Trickett & Sons	£3 16 11	£3 9 4
L. Somerfeld	3 6 4	3 3 6
Cooper Bros.	3 5 6	3 1 6
A. & F. Manuelle	3 5 5	3 0 3
William Griffiths	3 5 0	3 1 6
T. Milnes & Co.	3 4 6	3 0 0
John Mowlem & Co.	2 19 6	2 17 6

LONDON.—For alterations to the Excelsior Swimming Baths, Mansford-road, Bethnal Green, E. Mr. Walter Emden, architect, 105, Strand, W.C. :—

Holland & Hannen	£1,339 6	H. Roffey	£1,031 6
G. W. Haskins	1,100 6	Beer & Gash*	1,029 0
Robt. Marshall	1,098 2		

* Accepted subject to deductions.

LONDON.—For alterations and repairs, Redcliffe Carriage Works, South Kensington. Messrs. Morley & Letts, surveyors :—

J. Whitaker	£179 0	Childs & Sons, Ifield-road, S.W. (accepted)	£148 10
F. Holdstock	161 0		

LONDON.—Accepted for alterations and redecorating the "Brookland Arms," Brookland-road, S.W., for Mr. W. J. O. Kitson :—

R. E. Williams & Sons, Cabul-road, Battersea £119 10

LONDON.—Accepted for structural alterations—new drainage and decorations—at 50, Tollington-park, N., for Mrs. G. H. Cole. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C. :—

John Appleby, Cornwall-road, S.E. £726

MINEHEAD.—For the erection of shop and dwelling-house on north side of The Parade, for Mr. E. Culverwell. Mr. H. Dare Bryan, architect, 38, College Green, Bristol. Quantities by Mr. Bernard :—

Stephens, Bastow, & Co.	£1,795 0 0	G. H. Pollard	£1,550 0 0
Wm. Church	1,784 0 0	Poole	1,475 0 0
Cowlin & Son	1,700 0 0	John Burgess, Minehead*	1,457 0 7
Jas. Smith	1,676 12 10	Phillips & Son	1,428 0 0
Hatherley & Carr	1,550 0 0	Harrison	1,380 10 0

* Reduced estimate accepted.

MINEHEAD.—For the erection of two shops and dwelling-houses, on the north side of the Parade, for Mr. Willliam Shrives. Mr. H. Dare Bryan, architect, 38, College Green, Bristol. Quantities by Mr. Bernard:—

House No. 1.

Stephen Bastow, & Co.	£2,025 0 0	G. H. Bollard	£1,808 0 0
Wm. Church	1,997 0 0	Hurford & Burgess	1,685 11 2
Cowlin & Son	1,945 0 0	Poole	1,660 0 0
Jas. Smith	1,912 0 11	Phillips & Son	1,627 0 0
Hatherley & Carr	1,840 0 0	Harrison, Washford*	1,562 4 0

House No. 2.

Stephens & Co.	£1,795 0 0	G. H. Pollard	£1,555 0 0
Wm. Church	1,739 0 0	Poole	1,451 0 0
Cowlin & Son	1,720 0 0	Phillips & Son	1,432 0 0
Jas. Smith	1,654 0 5	Hurford & Burgess	1,338 18 7
Hatherley & Carr	1,595 0 0	Harrison, Washford*	1,335 6 0

* Accepted subject to various reductions.

MORTLAKE.—Accepted for executing certain alterations and additions to the sewage works, Mortlake, for the Richmond Main Drainage Board. Mr. Wm. Fairley, engineer:—

W. Cuncliffe, Kingston-on-Thames £493

MOUNTAIN ASH.—For the erection of school buildings, Penrhiwceiber; also extension of schools, Newtown, for the Llanwonno School Board. Mr. A. O. Evans, architect, Post-office Chambers, Pontypridd:—

Watkin Williams	£2,597 0 0	E. I. Davies	£2,571 10 6
D. Jones & Co.	2,636 0 0	Williams & James	2,384 10 5
W. Lissaman	2,600 0 0	Jenkins & Son, Porth*	2,300 0 0
T. Rees	2,589 0 0		

Re Newtown School.

Jenkins & Son, Porth* £275

* Accepted.

NEWPORT (Mon.).—For the construction of a new road, laying main sewer and branches, kerbing, &c., Rogiet, for the Rev. A. G. Morris. Mr. F. R. Bates, surveyor:—

J. Francis & Son	£1,150 0 0	A. S. Morgan & Co., Newport (accepted)	£680 0 0
Hy. C. Parfitt	840 0 0	T. Goldsworthy	677 6 0
J. Minks & Co.	779 10 0	T. Jones Davies	625 13 1
F. Ashley	714 12 8		

PENARTH (S. Wales).—For the execution of street improvement works, Arcot-lane and Windsor-road. Mr. Edwd. J. Evans, C.E., Local Board Offices, Penarth:—

Arcot-lane (North).

W. R. Meazey	£184 11 6	Thomas Griffiths, Penarth*	£108 14 1
Escott & Ford	147 9 7		
H. Astley Williams	131 15 0		

* Accepted.

Windsor-road.

W. R. Meazey	£150 18 0	Escott & Ford, Penarth*	£117 14 0
H. Astley Williams	133 0 4		
Thomas Griffiths	129 10 4		

* Accepted.

PORTMADOC (Wales).—For kerbing and tar-paving footways, Tremadoc, &c., for the Ynyscynhaiarn Local Board. Messrs. Thos. Roberts & Son, C.E., Portmadoc:—

John Hunter ..... £428 | Griffith Williams £389

PORTREATH (Cornwall).—Accepted for the erection of school buildings, &c., for the Illogan School Board. Mr. S. Hill, architect, Redruth:—

John Roberts, Pool, Carn Brea, R.S.O. £526

RUSHDEN (Northants).—For the erection of a shoe factory, Queen-street, for Messrs. Wm. Green & Son. Mr. H. Adnitt, architect, Harboro-road, Rushden. Quantities by the architect:—

Robt. Marriott	£1,835 0	Robt. Marriott, jun.	£1,695 0
Henry Martin	1,830 0	Wittington & Tomlin	1,690 0
Joseph Fishburn	1,739 0	Thomas Wilmot, jun.	
Henry Sparrow	1,726 0	Rushden (accepted)	1,692 0
Chas. Bayes & Son	1,717 13	T. & C. Berrills	1,679 0

ST. AUSTELL (Cornwall).—For the execution of waterworks, pipe-laying and reservoir (800,000 gallons), for the District Local Board. Mr. John Samble, surveyor, St. Austell:—

Contract No. 1.—Piping—For Trenching and Laying about 4,000 yds. 7-in., 1,770 yds. 4-in., and 1,020 yds. 3-in. Mains.

Edgar Duke	£701 16 0	Francis & Son, St. Austell*	£550 0 0
Shaddock	700 0 0	Ball	510 0 0
Delbridge	590 0 0	Tyzzer	466 13 0
Thomas & Son	583 0 0		
Hawke	575 11 8		

* Accepted.

Contract No. 2.—For Constructing a Concrete Covered Reservoir to Hold 800,000 Gallons.

Duke	£5,619	Bunt	£2,662
Shaddock	4,702	Thomas & Son	2,650
Julian	3,689	Delbridge	2,490
Tyzzer	2,896	Smith, St. Austell*	1,814
Ball	2,768		

* Accepted.

SKEGBY (Notts.).—For the construction of a system of sewerage and sewage disposal works, for the Mansfield Union Rural Sanitary Authority. Mr. Herbert Walker, C.E., Newcastle-chambers, Nottingham. Quantities by the Engineer:—

J. H. Vickers	£6,250 0	H. H. Barry	£5,107 3
Jno. Greenwood	6,160 0	J. Bradley	4,682 0
Holmes & Co.	5,750 0	J. F. Price	4,444 0
S. & E. Bentley	5,469 0	H. Vickers	4,383 0
Holm & King	5,172 0	John Lane, Skegby*	4,133 6

* Accepted.

SOUTHPORT (Lancs.).—For the supply of 20,000 wood-paving blocks, for the Corporation. Mr. W. Crabtree, Borough Surveyor, Southport:—

R. J. Tickle & Son	£200 0	Thos. Elliott & Sons	£115 0
Jas Webster & Bros.	135 0	Wright, Bros.	113 15
W. Gradwell & Co.	130 0	R. Wade & Son	112 10
Improved Wood Paving Co.	125 0	R. Thubron & Co.	106 0
Armstrong, Addison & Co.	119 0	R. Lander & Co.	105 0
Morris, Bros.	117 0	Bennetts & Co.	96 10
		J. W. Allen	55 0

TILBURY (Essex).—For additions, &c., to the schools at the Dock, for the Chadwell St. Mary School Board. Mr. James Thompson, architect, Cliff Town-road, Southend-on-Sea:—

Hammond & Son	£3,670	Parmenter	£3,289
White & Son	3,660	H. R. Rous	3,000
Watson	3,600	Brown	2,989
Multon & Wallis	3,498	White	2,954
Carter	3,329		

WALTON.—For alterations and additions at the Walton Schools, for the Walton-on-Thames School Board. Mr. F. Le Rossignol, architect, 1, Gresham Buildings, Basinghall-street. Quantities by Mr. E. M. Whitaker:—

B. Ingram & Co.	£812 0	E. J. Ingram (accepted)	£688 0
Dee	795 0	Peters	665 10

WALTON.—For alterations and additions at Hersham Schools, for the Walton-on-Thames School Board. Mr. F. Le Rossignol, architect, 1, Gresham Buildings, Basinghall-street. Quantities by Mr. E. M. Whitaker:—

Dee	£1,123	Peters	£877
B. Ingram & Co.*	1,095		

* Accepted.

WEST BROMWICH.—For the erection of school buildings, Bull-lane, for the School Board. Mr. Alfred Long, architect, 319, High-street, West Bromwich:

C. A. Horton, Brierley Hill (accepted conditionally) £2,313

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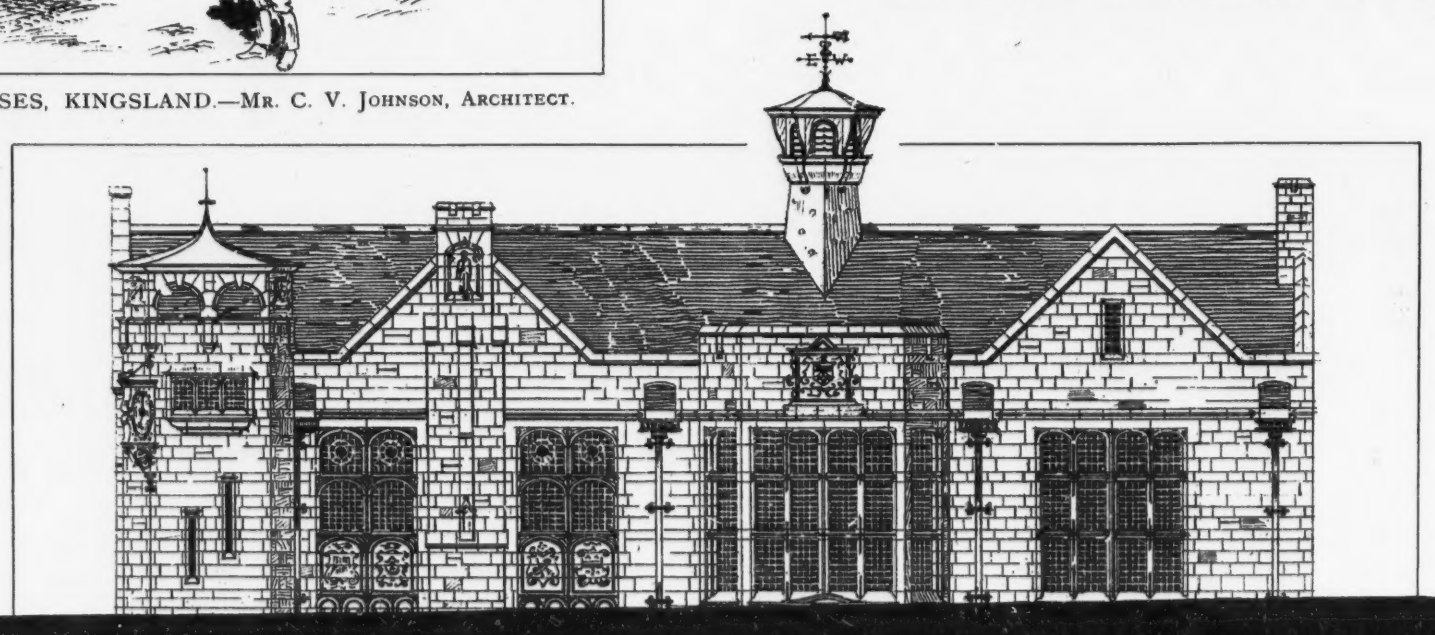
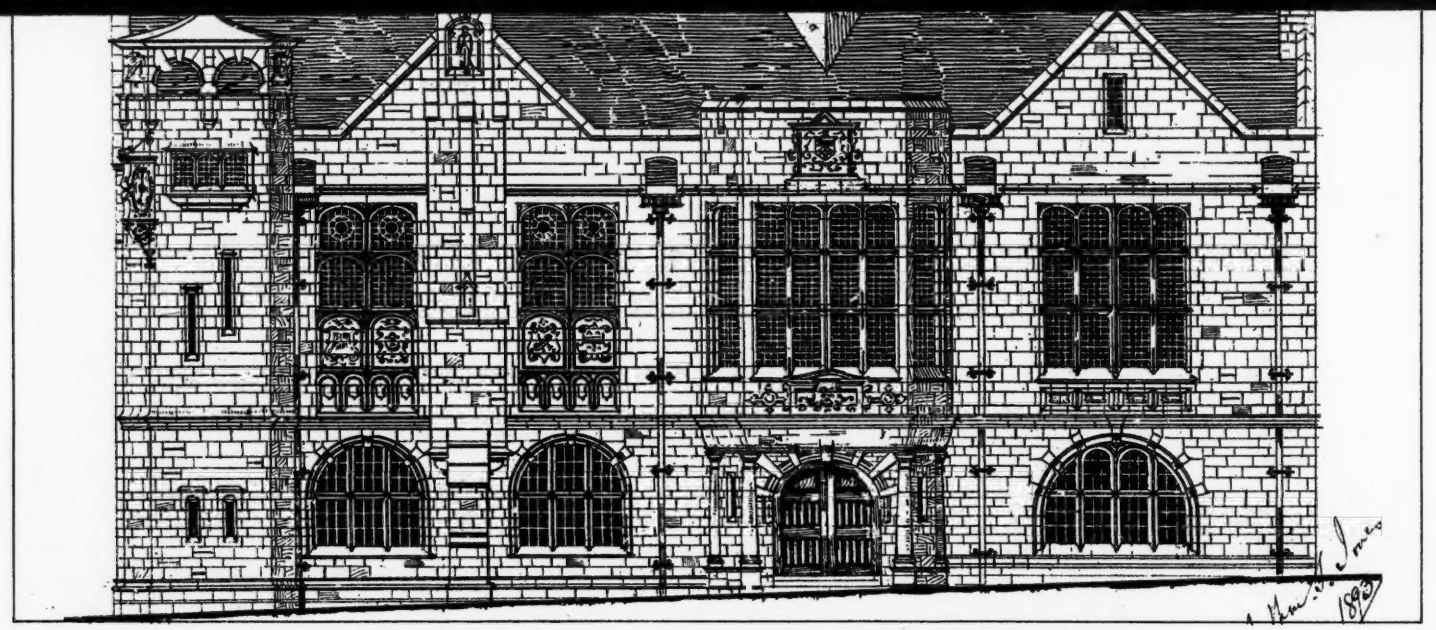
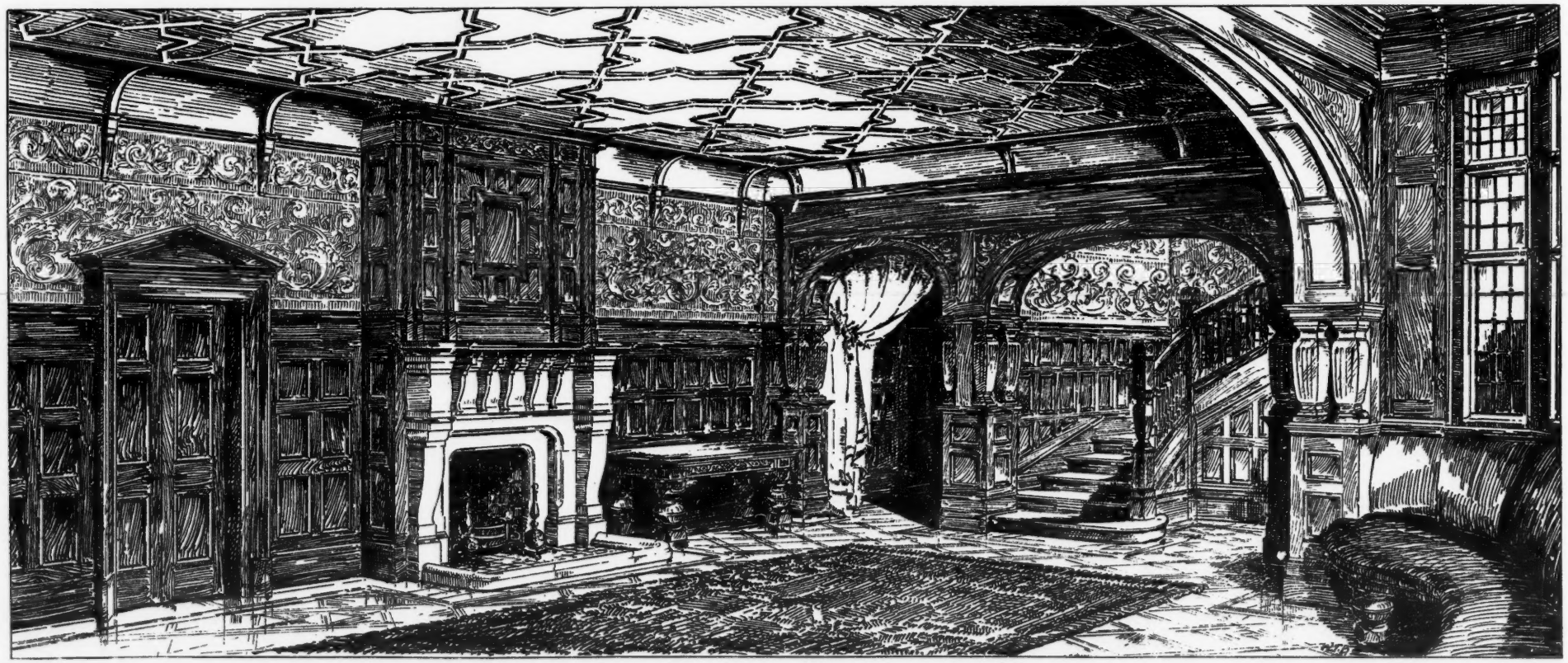




COMPETITION DESIGN FOR DARLINGTON MUNICIPAL BUILDINGS.—By Mr. Arthur S. Jones, A.R.I.B.A.



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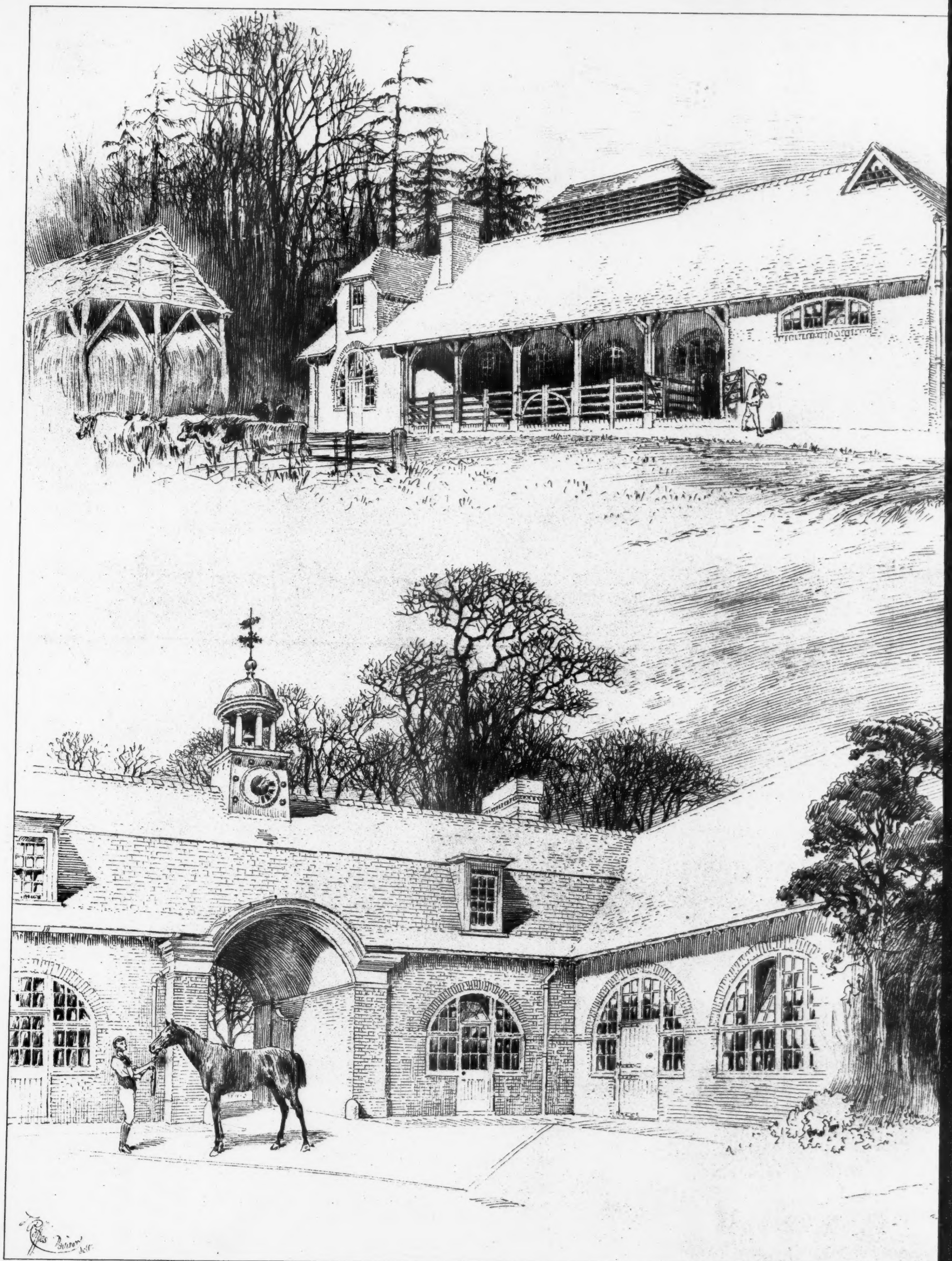
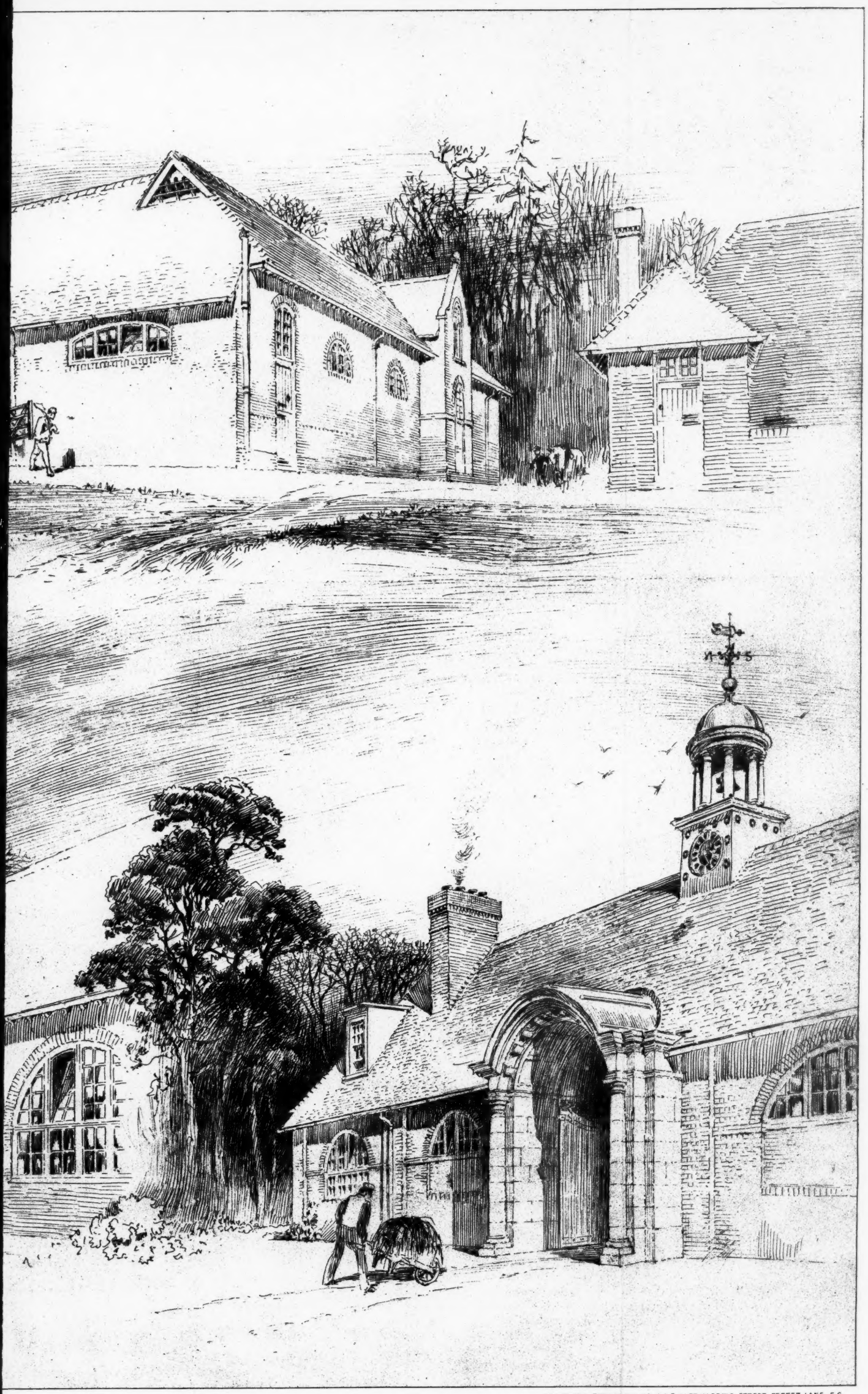


Royal Academy Exhibition, 1894.

STABLES, BICKLEY HALL, KENT.—Mr. Ernest Newton, Archite



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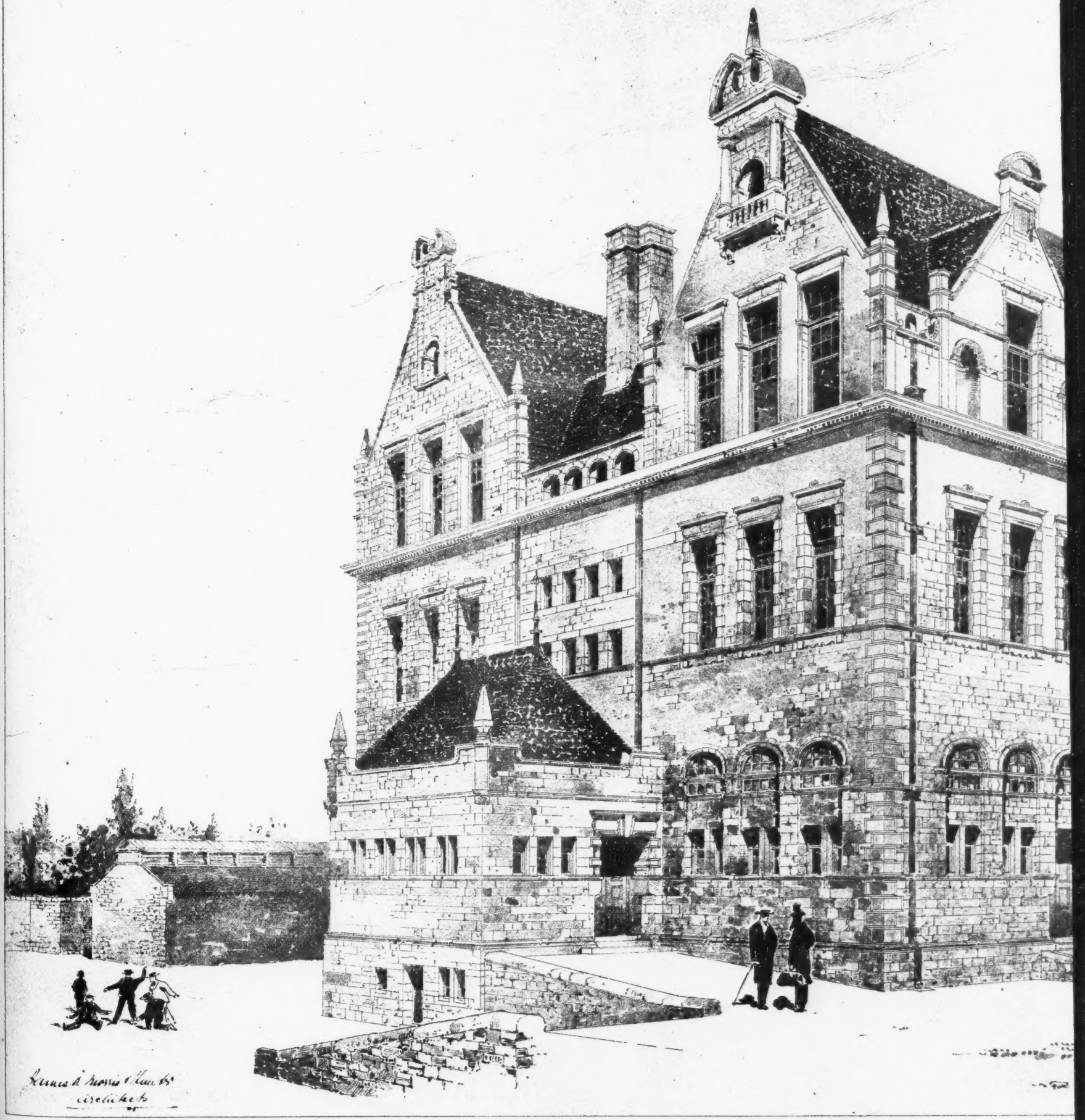
KENT.—Mr. Ernest Newton, Architect.



COMPETITION DESIGN FOR CRAIGHALL SCHOOL, LEITH.—By Me

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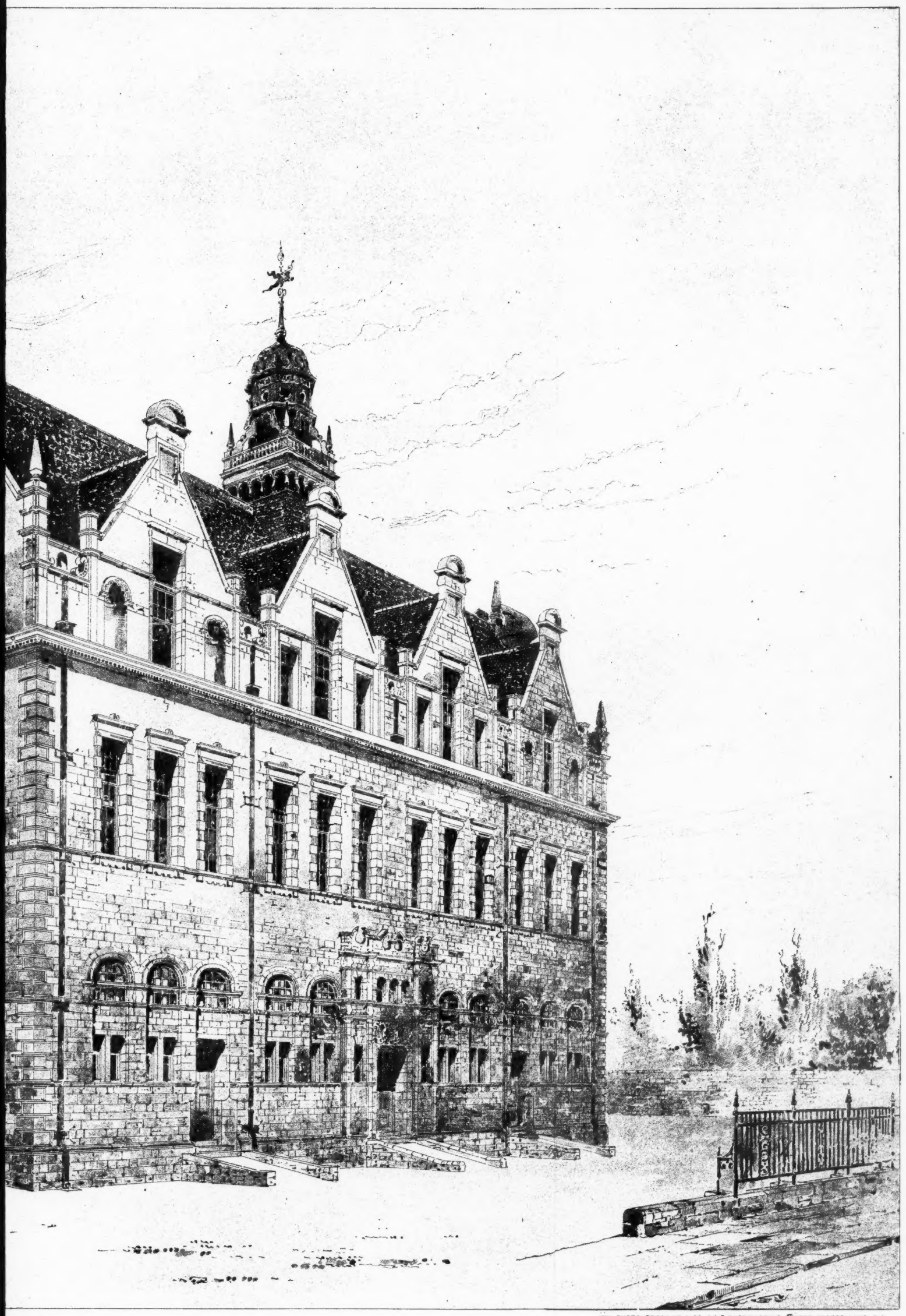

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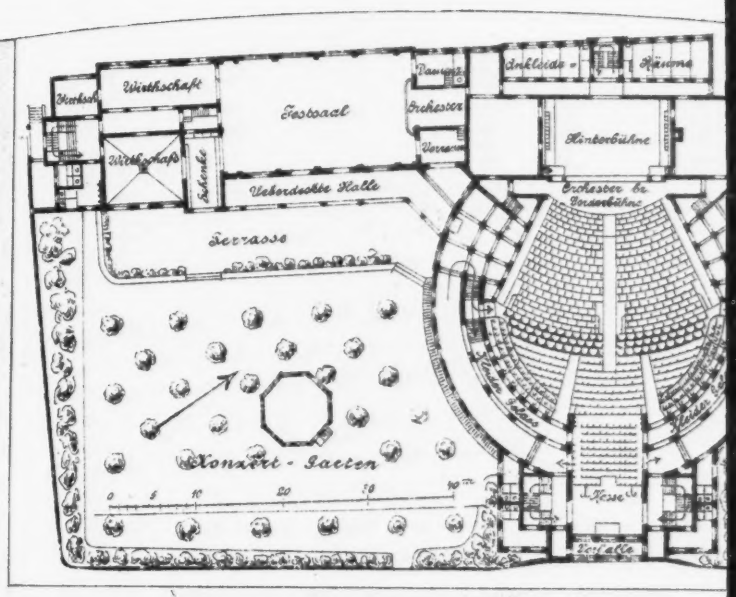
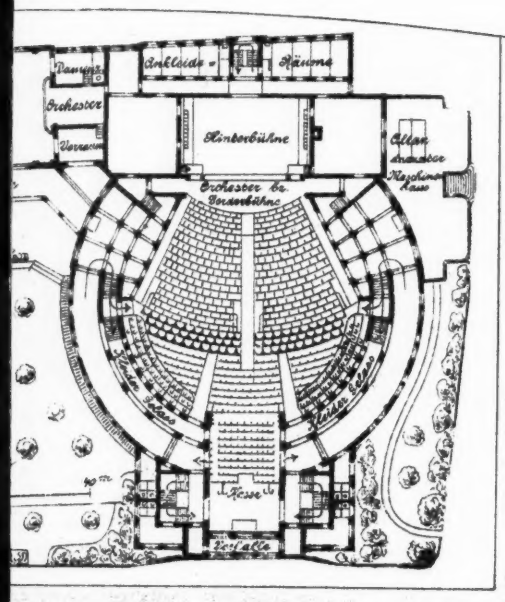
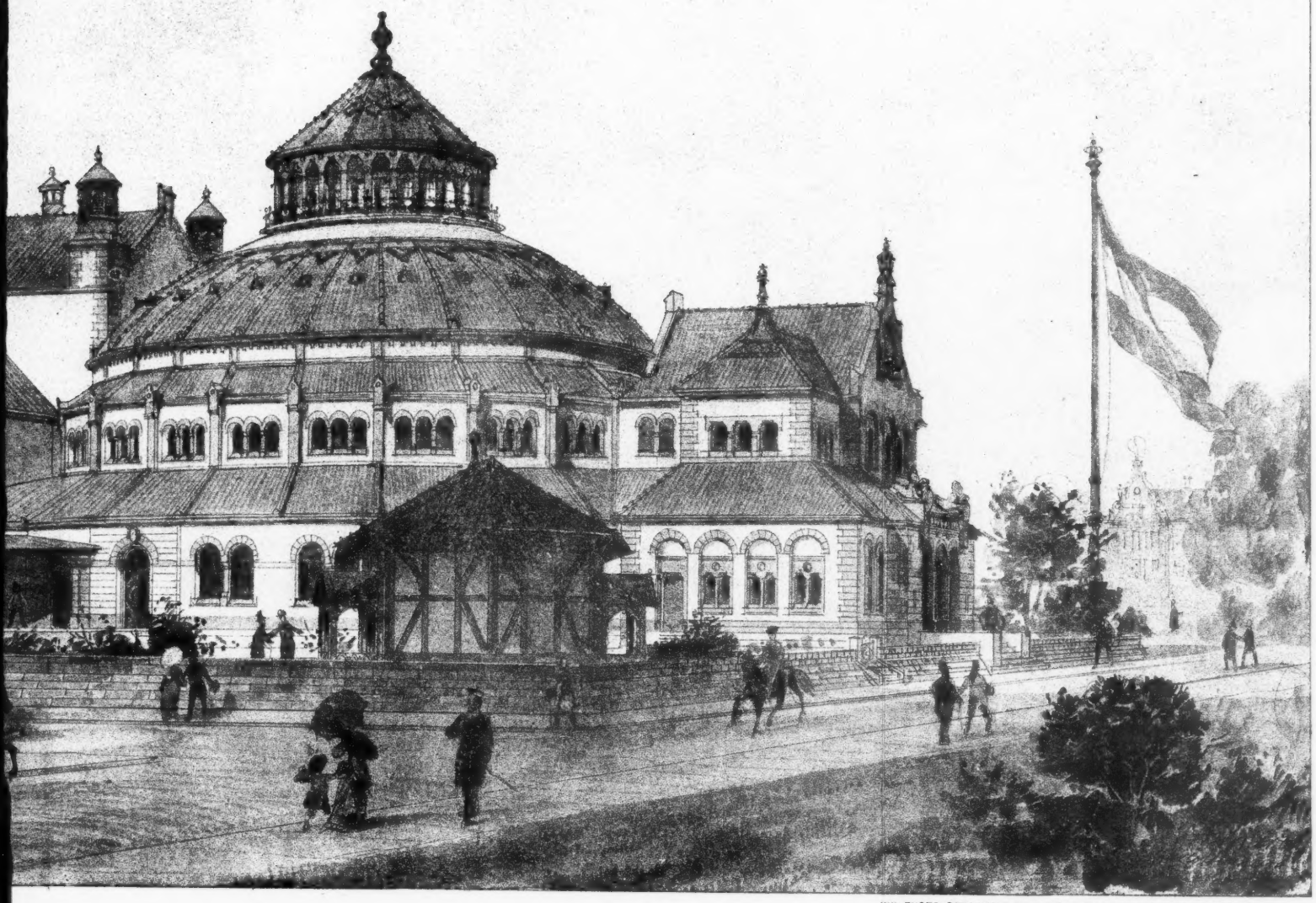
ALL SCHOOL, LEITH.—By Messrs. Morris & Hunter



PEOPLE'S THEATRE, WORMS.—Herr Otto March, Ar





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